December 23, 2004

Alan S. Rosenthal, Presiding Officer
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mail Stop: T-3F23
Washington, D.C. 20555

Richard F. Cole, Special Assistant
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mail Stop: T-3F23
Washington, D.C. 20555

In the Matter of
NUCLEAR FUEL SERVICES, INC.
(Erwin, Tennessee)
Docket Nos. 70-143-MLA, 70-143-MLA-2, 70-143-MLA-3

Dear Administrative Judges:

On December 22, 2004, the NRC Staff filed its Response to the Legal and Evidentiary Presentation of the Sierra Club et al. It has come to our attention that there was an error in the pagination of that document as well as an error on page 43 of the document. Attached is a corrected Staff Response. The Staff regrets the error.

Sincerely,

/RA/

Shelly D. Cole
Counsel for the NRC Staff

cc: Office of the Secretary
Office of Commission Appellate Adjudication
Daryl Shapiro, Esq.
Sean Barnett, Esq.
Neil J. Newman
Diane Curran, Esq

December 22, 2004

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE PRESIDING OFFICER

	)	Docket Nos.	70-143-MLA,
In the Matter of	)		70-143-MLA-2,
	)		70-143-MLA-3
NUCLEAR FUEL SERVICES, INC.	)		
	)	ASLBP Nos.	02-803-04-MLA,
(Erwin, Tennessee)	)		03-810-02-MLA,
	)		04-820-05-MLA

NRC STAFF RESPONSE TO THE LEGAL AND
EVIDENTIARY PRESENTATION OF THE SIERRA CLUB ET AL.

I. INTRODUCTION

Pursuant to the Presiding Officer's Order of December 7, 2004, and in accordance with 10 C.F.R. § 2.1233,[1] the NRC Staff (Staff) hereby responds to the Legal and Evidentiary Presentation by State of Franklin Group of the Sierra Club, Friends of the Nolichucky River Valley, Oak Ridge Environmental Peace Alliance, and Tennessee Environmental Council Regarding U.S. Nuclear Regulatory Commission Staff's Failure to Comply with National Environmental Policy Act in Licensing the Proposed BLEU Project (Oct. 14, 2004) (Written Presentation). The Written Presentation alleges that the Staff failed to comply with the requirements of the National Environmental Policy Act of 1969, as amended (NEPA),[2] in approving three requests for license amendments submitted by licensee Nuclear Fuel Services, Inc. (NFS). The Staff submits that in

[1] The Commission published revisions to its Rules of Practice in 10 C.F.R. Part 2 on January 14, 2004, made effective for proceedings on license applications docketed and noticed in the *Federal Register* after the regulations' effective date of February 13, 2004. *See* 69 Fed. Reg. 2,182 (Jan. 14, 2004). The license amendment requests at issue in this proceeding were docketed and noticed prior to the effective date of the new rule. Thus, the provisions of 10 C.F.R. Part 2 in effect at time the applications were noticed govern this proceeding. Citations to the Commission's regulations in 10 C.F.R. Part 2 refer to the regulations then in effect.

[2] 42 U.S.C. §§ 4321, 4331–35.

approving the license amendments, it complied fully with the requirements of NEPA and the Commission's implementing regulations in 10 C.F.R. Part 51.[3]

II. BACKGROUND

NFS is the holder of Special Nuclear Material (SNM) License No. SNM-124, which authorizes the licensee to process highly enriched uranium (HEU) into a classified fuel product, process scrap materials containing HEU to recover uranium, and perform various decommissioning activities at its Erwin, Tennessee site.[4] By letters dated February 28, 2002, October 11, 2002, and October 23, 2003, NFS submitted to the NRC requests for three license amendments in support of the proposed Blended Low Enriched Uranium (BLEU) Project. The BLEU Project is part of a Department of Energy (DOE) initiative to reduce stockpiles of surplus HEU through re-use or disposal.[5] NFS has contracted with Framatome ANP Inc. to downblend surplus HEU into a low enriched uranium (LEU) dioxide product, which is expected to be converted to commercial reactor fuel for use in a Tennessee Valley Authority nuclear power reactor.[6] The license amendments at issue in this proceeding authorize NFS to produce the LEU dioxide product.[7]

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[3] *See* attached Affidavit of Mary T. Adams, Michael A. Lamastra, and Donald E. Stout.

[4] *See* Environmental Assessment for Proposed License Amendments to Special Nuclear Material License No. SNM-124 Regarding Downblending and Oxide Conversion of Surplus High-Enriched Uranium, at 1-1 (June 2002) (June 2002 EA), attached as Exhibit 1; Environmental Assessment for Renewal of Special Nuclear Material License No. SNM-124, at 1-1 to 1-4 (Jan. 1999) (1999 EA), attached as Exhibit 2.

[5] *See* Exhibit 1 at 1-3.

[6] *Id.*

[7] *Id.*

The BLEU Project calls for the use of four buildings at NFS's Erwin site, collectively referred to as the BLEU Complex.[8] The BLEU Complex is to consist of the BLEU Preparation Facility, to be located in an existing structure, and three newly constructed buildings: the Uranyl Nitrate Building, Oxide Conversion Building, and Effluent Processing Building.[9] Downblending operations are to occur at the BLEU Preparation Facility (BPF), located in an existing but inactive production area at the NFS site.[10] The BPF will utilize some existing process equipment to be relocated from within the NFS site.[11] HEU aluminum alloy and HEU metal (buttons) will be converted into a high-enriched uranyl nitrate (UN) solution.[12] Using a previously licensed process for License No. SNM-124, the high-enriched UN will be downblended with a UN solution blendstock, produced from the dissolving of a natural uranium oxide in nitric acid, to produce batches of low-enriched UN solution.[13]

The Uranyl Nitrate Building (UNB) will be authorized to store low-enriched UN solution produced at the BPF.[14] Low-enriched UN solutions, limited to a weight percent enrichment of #5 percent of U^{235}, prepared by the Westinghouse Savannah River Company at DOE's Savannah River Site, will be shipped to the UNB.[15] Twenty-four (24) high density polyethylene tanks with a capacity of 39.742 m^3 (10,500 gal) will be used to store low-enriched UN solution from the BPF,

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[8] *Id.* at 2-1.

[9] *Id.*

[10] *Id.*

[11] *Id.*

[12] *Id.*

[13] *Id.* at 2-1 to 2-5.

[14] *Id.* at 2-5.

[15] *Id.* at 1-2.

and one 18.92 m^3 (5,000 gal) tank will be used to store natural UN blendstock produced at the Oxide Conversion Building.[16] The UN blendstock will be shipped to the Savannah River Site.[17]

The Oxide Conversion Building (OCB) will process the low-enriched UN solution into a UO_2 powder using the ammonium diuranate (ADU) process, a process licensed for use for the last 20 years at Framatome ANP, Inc.'s Richland Plant under NRC License No. SNM-1227.[18] The UO_2 powder will be then shipped to the Framatome ANP, Inc. Richland facility for use in manufacturing nuclear fuel.[19] A dilute sodium nitrate waste stream used in the ADU process will be sent to the Effluent Processing Building for treatment.[20] At the OCB, UO_3 will also be dissolved in nitric acid to produce a UN solution blendstock that will be stored in the UNB.[21]

The Effluent Processing Building (EPB) will receive the liquid sodium nitrate waste stream from the OCB, and will be treated via a new, two-step process.[22] First, the waste stream will be treated with sodium hydroxide to recover ammonia.[23] Then, the waste stream will be fed into an evaporator, producing a concentrated sodium nitrate solution.[24] The overheads stream from the

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[16] *Id.* at 2-5.

[17] *Id.*

[18] *Id.* at 1-3, 2-5.

[19] *Id.* at 2-1, 2-7.

[20] *Id.* at 2-7.

[21] *Id.*

[22] *Id.*

[23] *Id.*

[24] *Id.*

evaporator will be sampled and discharged into the sanitary sewer, and the concentrated sodium nitrate will be processed into a solid waste for disposal.[25]

III. PROCEDURAL HISTORY

A. The First License Amendment

The license for the NFS facility was first issued in 1957 and has been renewed several times over the years, most recently in 1999. Beginning in 2002, NFS submitted three consecutive license amendment requests to the NRC to authorize construction and operation of the BLEU Complex. The first request, tendered on February 28, 2002, sought authorization to store LEU at the UNB.[26] The NRC Staff issued an environmental assessment dated June 30, 2002 (June 2002 EA) which assessed the potential environmental impacts of all three license amendments. The Staff published notice of its Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the first amendment request, which included an opportunity to request a hearing, in the *Federal Register* on July 9, 2002.[27] The State of Franklin Group of the Sierra Club et al. (Sierra Club), among others, submitted a request for hearing on the first NFS amendment request.[28] The Chief Administrative Judge of the Atomic Safety and Licensing Board designated a Presiding Officer and Special Assistant to adjudicate requests for hearing on NFS's amendment application

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[25] *Id.*

[26] *See* Letter from B. Marie Moore, Vice President, Safety and Regulatory, NFS, to Director, NMSS, NRC (Feb. 28, 2002) (Hearing File Document #11).

[27] 67 Fed. Reg. 45,555 (July 9, 2002). The Presiding Officer determined that this publication provided insufficient notice of the opportunity to request a hearing and suspended the proceeding pending issuance of a revised *Federal Register* notice to clarify the Staff's July 9, 2002 *Federal Register* notice with respect to the opportunity to request a hearing. *See* unpublished Memorandum and Order of Sept. 23, 2002. The Staff published a revised *Federal Register* notice for the receipt of the first amendment request, availability of the Staff's EA , and the Staff's FONSI on October 30, 2002. *See* 67 Fed. Reg. 66,172 (Oct. 30, 2002).

[28] *See* Request for Hearing by [Sierra Club] (Aug. 8, 2002).

on September 3, 2002.[29] On September 13, 2002, the Staff notified the Presiding Officer that it did not desire to participate in an adjudicatory proceeding on the first license amendment request.[30]

On November 27, 2002, Sierra Club filed a hearing request with respect to the Staff's revised *Federal Register* notice, and a motion to hold the proceeding in abeyance pending submittal by NFS of all three of its license amendment requests.[31]

After considering arguments advanced by the parties and the Staff, the Presiding Officer directed that the proceeding be held in abeyance pending the submission of all three amendment requests for the BLEU Project, so that challenges to the project could be considered as a whole.[32] On July 7, 2003, the Staff issued its Safety Evaluation Report (SER) for the first amendment request, for the UNB.[33] The Staff published notice of issuance of the amendment, Amendment 39 to Materials License SNM-124, on August 7, 2003.[34]

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[29] *See* Designation of Presiding Officer (Sept. 3, 2002).

[30] *See* Letter from Jennifer Euchner and David Cummings to Administrative Judges dated Sept. 13, 2002.

[31] *See* Request for Hearing by [State of Franklin Group of the Sierra Club.] (Nov. 27, 2002).

[32] *See* Order of Jan. 21, 2003; *see also Nuclear Fuel Servs., Inc.* (Erwin, Tennessee), LBP-03-01, 57 NRC 9 (2003).

[33] *See* Safety Evaluation Report: Nuclear Fuel Services, Inc.,Amendment 39 (Tac Nos. L31688, L31739, L31721 and L31748) - to Authorize Uranyl Nitrate Building at the Blended Lowenriched Uranium Complex and Possession Limit Increase (July 7, 2003) (Hearing File Document #49a).

[34] *See* 68 Fed. Reg. 47,108 (Aug. 7, 2003).

B. The Second License Amendment

During this period, NFS submitted its second amendment request, seeking authorization to operate the BPF.[35] The NRC published a notice of receipt of the request on January 7, 2003.[36] Thereafter, Sierra Club filed a request for a hearing on the second amendment application.[37] On February 20, 2003, the Staff notified the Presiding Officer that it did not desire to participate in an adjudicatory proceeding on the second license amendment request.[38] The Staff published notice of an EA and FONSI for the second amendment request, for the BPF, on October 27, 2003.[39] On January 31, 2004, the Staff issued its SER for the second amendment request for the BPF.[40] Notice of issuance of Amendment 47 for Special Nuclear Material License SNM-124, for the BPF, was published thereafter on February 11, 2004.[41]

C. The Third License Amendment

NFS submitted its third amendment request, for the OCB and EPB, to the NRC on October 23, 2003.[42] Notice of receipt of the third amendment request was published on

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[35] *See* Letter from B. Marie Moore, Vice President, Safety and Regulatory, NFS, to Director, NMSS, NRC (Oct. 11, 2002) (Hearing File Document #23).

[36] *See* 68 Fed. Reg. 796 (Jan. 7, 2003).

[37] *See* Second Request for Hearing by [Sierra Club] (Feb. 6, 2003).

[38] *See* Letter from Jennifer Euchner to Administrative Judges dated Feb. 20, 2003.

[39] *See* 68 Fed. Reg. 61,235 (Oct. 27, 2003).

[40] *See* Safety Evaluation Report for Nuclear Fuel Services, Inc. License Amendment 47 Blended Low-Enriched Uranium Preparation Facility (Jan. 31, 2004) (Hearing File Document #78).

[41] *See* 69 Fed. Reg. 6,701 (Feb. 11, 2004).

[42] *See* Letter from B. Marie Moore, Vice President, Safety and Regulatory, NFS, to Director, NMSS, NRC (Oct. 23, 2003) (Hearing File Document #62).

December 24, 2003.[43] Sierra Club filed a request for hearing with respect to NFS' third amendment application on February 2, 2004.[44] On March 5, 2004, the Staff notified the Presiding Officer that it did not desire to participate in an adjudicatory proceeding on the third license amendment request.[45] The Staff published notice of its EA and FONSI for the third amendment request, for the OCB and EPB, on June 18, 2004.[46] The Staff issued its SER for the third amendment request on July 30, 2004.[47] Notice of the issuance of Amendment 51 to Special Nuclear Materials License SNM-124, for the OCB and EPB, was published on October 12, 2004.[48]

D. Disposition of Hearing Requests for the Three License Amendments

The Presiding Officer issued a ruling on all the proffered requests for hearing related to the three license amendment requests on March 17, 2004.[49] The Presiding Officer denied the hearing requests of all petitioners except Sierra Club.[50]

With respect to the requests for hearing on all three license amendment requests filed by Sierra Club, the Presiding Officer concluded that the requesters had established standing and proffered at least one "area of concern" germane to the subject matter of the proceeding, as

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[43] *See* 68 Fed. Reg. 74,653 (Dec. 24, 2003).

[44] *See* Third Request for Hearing by [Sierra Club] Regarding Nuclear Fuel Services' Proposed BLEU Project (Feb. 2, 2004).

[45] *See* Letter from Angela B. Coggins to Administrative Judges dated Mar. 5, 2003.

[46] *See* 69 Fed. Reg. 34,198 (June 18, 2004).

[47] *See* Safety Evaluation Report for Nuclear Fuel Services, Inc. License Amendment 51 Blended Low-Enriched Uranium Oxide Conversion Building and Effluent Processing Building (July 30, 2004) (Hearing File Document #100b).

[48] *See* 69 Fed. Reg. 60,671 (Oct. 12, 2004).

[49] *See Nuclear Fuel Servs., Inc.* (Erwin, Tennessee), LBP-04-05, 59 NRC 186 (2004).

[50] *Id*. at 200.

required by 10 C.F.R. § 2.1205(h).[51] The Presiding Officer admitted four of the Sierra Club's areas of concern for adjudication.[52] Sierra Club's first admitted area of concern asserted that the Staff failed to comply with NEPA, which required the Staff to assess the impacts of the BLEU amendments in an EIS.[53] The Presiding Officer also admitted three of Sierra Club's areas of concern on safety matters, which alleged that NFS: (1) has not demonstrated compliance with 10 C.F.R. §§ 70.23(a)(5) and 70.25, which require the funding of decommissioning costs; (2) has not demonstrated compliance with 10 C.F.R. § 70.23(a)(2)-(4), which require an applicant to be qualified by reason of training and experience to use licensed material, and to propose equipment, facilities, and procedures adequate to protect health and minimize danger to life and property; and (3) could not be counted on to make complete and accurate reports to the NRC.[54] While the Staff had elected not to participate as a party in this proceeding, the Presiding Officer concluded that its participation on all issues would be of material assistance in the resolution of those issues.[55] Thus, the Presiding Officer made the Staff a full party to the proceeding.[56] Pursuant to the Presiding Officer's Order of September 30, 2004, Sierra Club filed its Written Presentation on the merits of its areas of concern on October 14, 2004. The Staff now responds to that Written Presentation.

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[51] *See id.* at 196-200.

[52] *Id.* at 198-99.

[53] *Id.* & n.14.

[54] *Id.* at 199.

[55] *Id*. at 200-201.

[56] *Id*. at 201.

IV. STATUTORY AND REGULATORY REQUIREMENTS

A. The National Environmental Policy Act of 1969

Section 102(2)(C) of NEPA provides, in pertinent part:

> The Congress authorizes and directs that, to the fullest extent possible . . . (2) all agencies of the Federal Government shall --
> . . . .
> (C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --
> (i) the environmental impact of the proposed action,
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
> (iii) alternatives to the proposed action,
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.[57]

NEPA's "action-forcing" mechanisms do not mandate that agencies reach any substantive results, but rather focus federal agency decision-making on the environmental effects of proposed agency actions.[58] The mandate of NEPA is thus "essentially procedural."[59] The statute's "twin aims" are to obligate agencies (1) to consider the significant environmental impacts of a proposed action and (2) to inform the public that the agency actually has taken into account environmental concerns, thereby ensuring that agencies take a "hard look" at the effects on the environment prior to taking action.[60] If an agency articulates a reasoned consideration of the environmental effects of the

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[57] 42 U.S.C. § 4332(2)(C).

[58] *See Marsh v. Ore. Nat'l Res. Council*, 490 U.S. 360, 371 (1989).

[59] *See Vt. Yankee Nuclear Power Corp. v. Nat'l Res. Def. Council, Inc.*, 435 U.S. 519, 558 (1978).

[60] *See Balt. Gas & Elec. Co. v. Nat'l Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983) (internal

(continued...)

proposed action and concludes that the resulting impacts are not so significant as to require preparation of an EIS, the agency has taken the "hard look" required by NEPA.[61]

According to Council on Environmental Quality (CEQ) regulations,[62] whether a proposed activity will result in "significant" environmental effects requires consideration of the "context" of the action and the "intensity" of its effects.[63] Prior to the promulgation of this regulation, the Second Circuit alternatively articulated relevant factors as:

> (1) the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area affected by it, and (2) the absolute qualitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area. Where conduct conforms to existing uses, its adverse consequences will usually be less significant than when it represents a radical change.[64]

The courts have generally opined that "[t]he standard for determining whether the implementation of a proposal would significantly affect the quality of the human environment is whether 'the [petitioner] has alleged facts which, if true, show that the proposed project may significantly

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[60](...continued)
citations omitted).

[61] *See Hodges v. Abraham*, 300 F.3d 432, 446 (4th Cir. 2002); *Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1467-68 (9th Cir. 1996).

[62] While the Commission has stated that it does not consider CEQ regulations to be legally binding on the NRC, the Commission has indicated that those regulations are entitled to "substantial deference." *See Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-91-2, 33 NRC 61, 72 n.3 (1991); Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments, 49 Fed. Reg. 9,352, 9,356 (Mar. 12, 1984).

[63] *See* 40 C.F.R. § 1508.27.

[64] *See Hanly v. Kleindienst*, 471 F.2d 823, 830-31 (2d Cir. 1972).

degrade some human environmental factor.'"[65] Further, the Supreme Court has cautioned that section 102(2)(C) of NEPA does not direct agencies to consider every impact or effect of a proposed action, but only "environmental" impacts–impacts to "the world around us, so to speak."[66] Environmental impacts requiring NEPA consideration therefore exist only where the agency action will have a causal relationship with a change in the physical environment.[67]

B. NRC Regulations Implementing NEPA

The Commission regulations implementing section 102(2) of NEPA are found in 10 C.F.R. Part 51.[68] Pursuant to Part 51, the Staff first determines, based on the criteria and classifications in 10 C.F.R. §§ 51.20, 51.21, and 51.22, whether a categorical exclusion applies to the proposed action or whether to prepare an EA or an EIS.[69] An EIS must be prepared by the Staff where "[t]he proposed action is a major Federal action significantly affecting the quality of the human environment[,]" or where the Commission exercises its discretion and determines that an EIS should be prepared.[70] Certain classes of actions have been determined to constitute major Federal actions that significantly affect the quality of the human environment, and automatically require the preparation of an EIS.[71] The Commission has determined that certain other categories of licensing and regulatory actions are eligible for categorical exclusion from the requirement to prepare either

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[65] *See Found. for N. Am. Wild Sheep v. U.S. Dep't of Agric.*, 681 F.2d 1172, 1177-78 (9th Cir. 1982).

[66] *See Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 772 (1983).

[67] *Id.* at 773-74.

[68] *See* 10 C.F.R. § 51.10(a).

[69] *See* 10 C.F.R. § 51.25.

[70] *See* 10 C.F.R. § 51.20(a).

[71] *See* 10 C.F.R. § 51.20(b).

an EA or an EIS.[72] Where the proposed action is not in the list of actions that the Commission has determined require preparation of an EIS and is not eligible for a categorical exclusion, the Staff must determine whether the action is a "major Federal action significantly affecting the quality of the human environment" and thus requires the preparation of an EIS.[73] The regulations provide that this determination will be made via preparation of an EA.[74] An EA must identify the proposed action and include:

> (1) A brief discussion of:
> (i) The need for the proposed action;
> (ii) Alternatives as required by section 102(2)(E) of NEPA;
> (iii) The environmental impacts of the proposed action and alternatives as appropriate; and
> (2) A list of agencies and persons consulted, and identification of sources used.[75]

Based on the evaluation of the significance of the proposed action's environmental effects as detailed in the EA, the Staff then makes a determination whether to prepare a finding of no significant impact (FONSI).[76] Where the Staff determines that it will prepare a FONSI, its finding must:

> (1) Identify the proposed action;
> (2) State that the Commission has determined not to prepare an [EIS] for the proposed action;
> (3) Briefly present the reasons why the proposed action will not have a significant effect on the quality of the human environment;
> (4) Include the [EA] or a summary of the [EA]. If the [EA] is included, the finding need not repeat any of the discussion in the [EA] but may incorporate it by reference;
> (5) Note any other related environmental documents; and

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[72] *See* 10 C.F.R. §§ 51.21, 51.22(a), (c)(1)–(21).

[73] *See* 10 C.F.R. §§ 51.20(a)(1), 51.21.

[74] *See* 10 C.F.R. § 51.21.

[75] 10 C.F.R. § 51.30(a).

[76] *See* 10 C.F.R. § 51.31.

> (6) State that the finding and any related environmental documents are available for public inspection and where the documents may be inspected.[77]

In discharging its responsibilities under NEPA, the NRC Staff is guided by a "rule of reason" whereby only impacts which are "reasonably foreseeable" need be addressed.[78] Under this rule of reason, the Staff is excused from conducting a NEPA analysis of impacts that are "remote and speculative" or which present "worst-case" scenarios.[79] Regarding potential accidents, this rule of reason applied by the courts recognizes that

> there is a difference between assessing the future consequences of agency actions that 'will affect the environment,' . . . and assessing the risk that proposed actions might have environmental effects, especially in the event of accidents. The fact that effects are only a possibility does not insulate the proposed action from consideration under NEPA, but it does accord an agency with some latitude in determining whether the risk is sufficient to require preparation of an EIS.[80]

V. SUMMARY OF SIERRA CLUB'S ARGUMENTS

Sierra Club argues that the potential consequences of BLEU Project accidents are significant, that the BLEU Project meets the NRC's "quantitative standard for reasonable forseeability," and that BLEU amendments' impacts meet the NRC's "qualitative standard of

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[77] 10 C.F.R. § 51.32(a).

[78] *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-55, 56 NRC 340, 348-49 (2002) (*PFS*).

[79] *Id. See also San Luis Obispo Mothers for Peace v. NRC*, 751 F.2d 1287, 1300 (D.C. Cir. 1984) (where an EIS is required, it need not address "remote and highly speculative consequences."), *aff'd on reh'g en banc*, 789 F.2d 26 (D.C. Cir. 1986).

[80] *City of New York v. U.S. Dep't of Transp.*, 715 F.2d 732, 746 n.14 (2d Cir. 1983). "What we reject is an automatic rule requiring preparation of an EIS for every action that has any possibility, however remote, of causing serious accidental injury. Such a rule would routinely require an EIS for federal actions, since it is hard to imagine any agency action involving people or equipment that is not subject to some estimable risk of causing serious accidental injury." *Id.* at 752 n.20.

significance."[81] Based on these arguments, they conclude that the NRC Staff erred by not preparing an EIS.[82]

Sierra Club first argues that "it is clear from the NRC Staff's review of NFS' safety analyses that the consequences of accidents at the proposed BLEU Project are potentially severe."[83] To support this assertion Sierra Club points to Integrated Safety Analyses (ISAs) submitted by NFS, which define accidents as "high consequence" or "intermediate consequence" based on the criteria in 10 C.F.R. § 70.61.[84] Sierra Club then concludes that, "Clearly, both 'high consequence' and 'intermediate consequence' accidents impact the human environment in a significant way, by causing environmental impacts ranging from permanent health injuries to death, and including significant radiological releases."[85] Sierra Club also points to a criticality accident at the Tokai-Mura facility in Japan as evidence of the potential off-site impacts of a criticality accident.[86] It acknowledges an NRC report that concludes off-site radiation exposures from the Tokai-Mura accident were insignificant, but asserts that 400-plus off-site individuals received doses in excess of NRC public dose standards.[87] It also alleges that doses would have been higher if the accident had not been brought under control or if it had involved HEU.[88]

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[81] *See* Written Presentation at 23, 32.

[82] *Id.* at 22-33, 37-40.

[83] *Id.* at 25.

[84] *Id.* at 25-26.

[85] *Id*. at 26.

[86] *Id*. at 26-27.

[87] *Id*. at 27.

[88] *Id*.

Sierra Club next argues that BLEU Project impacts have not been demonstrated to be "remote and speculative."[89] Sierra Club points to a number of "high" and "intermediate" consequence accidents listed in NFS' ISAs that have probabilities of 10^{-5} or greater and assert that such accidents are reasonably foreseeable and that the NRC cannot avoid preparation of an EIS based on such probabilities.[90]

Finally, Sierra Club argues that the BLEU Project also meets qualitative criteria for significant impacts promulgated by the CEQ and adopted by the NRC in NUREG-1748.[91] Specifically, it asserts that "the BLEU Project would inflict 'undesirable public health or safety effects' by posing a relatively large public health risk to a large community . . . ."[92] It goes on to focus on the number of people near the site. In addition, Sierra Club asserts that there are unique geographical features of the site, particularly the valley in which the site is located and the nearby Nolichucky River.[93] It claims that the valley has the potential to trap airborne releases and that the Nolichucky River is used for public recreation and as a source of drinking water.[94] Finally, Sierra Club argues that the BLEU Project's environmental impacts are "highly uncertain" and involve "unknown risks."[95] They assert that because "so many judgments about the likelihood of accidents and the effectiveness of mitigative measures are required, there is a relatively high level of uncertainty" in a determination that the BLEU Project will not have significant environmental

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[89] *Id*. at 28-32.

[90] *Id*.

[91] *Id*. at 33.

[92] *Id*. at 33-34.

[93] *Id*. at 35.

[94] *Id*.

[95] *Id*. at 35-37.

impacts.[96] Sierra Club concludes that because the BLEU Project meets these "qualitative criteria" an EIS should be prepared.[97]

VI. DISCUSSION

A. Burden of Proof and Unsupported Areas of Concern

The Staff bears the ultimate burden to demonstrate its compliance with NEPA.[98] Issues for hearing in proceedings held under 10 C.F.R. Part 2, Subpart L, are raised through an intervenor's identification of areas of concern, which "provide the presiding officer with the minimal information needed to ensure the intervenor desires to litigate issues germane to the licensing proceeding and therefore should be allowed to take the additional step of making a full written presentation under § 2.1233."[99] In promulgating the regulations in Subpart L, the Commission contemplated that the submission of a written presentation would "be the vehicle by which the parties . . . are heard and the issues resolved."[100] Admitted areas of concern are thus addressed on their merits by an intervenor at the time of its written presentation.[101] A failure to substantiate areas of concern in its written presentation should result in the intervenor being disallowed from addressing those

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[96] *Id*. at 36.

[97] *Id.* at 37.

[98] *See La. Energy Servs., L.P.* (Claiborne Enrichment Ctr.), CLI-98-3, 47 NRC 77, 89 (1998).

[99] *See* Informal Hearing Procedures for Materials Licensing Adjudications, 54 Fed. Reg. 8,269, 8,272 (proposed Feb. 28, 1989); *see also Fansteel, Inc.* (Muskogee, Oklahoma Facility), LBP-03-22, 58 NRC 363, 368 (2003).

[100] 54 Fed. Reg. at 8,274.

[101] 10 C.F.R. § 2.1233(c). *See Advanced Med. Sys.* (Cleveland, Ohio), LBP-95-3, 41 NRC 195, 199 n.17 (1995).

concerns at a later stage in the proceeding, when only rebuttal of new material is permitted.[102] It follows that where an intervenor fails to offer evidence or arguments on admitted areas of concern in a written presentation under 10 C.F.R. § 2.1233, the intervenor has failed to meet its burden of production with respect to the litigation of those issues.[103]

The Presiding Officer in this proceeding admitted several safety areas of concern asserted by Sierra Club.[104] In approving the three license amendments at issue, the Staff made several safety findings that squarely address these concerns.[105] Sierra Club, however, did not address these concerns in their written presentation. Accordingly, the Presiding Officer should find that Sierra Club has not met its burden to substantiate these stated areas of concern. Moreover, a written presentation under Subpart L should include "documentary data, informational material, and other supporting evidence . . . ."[106] Respecting the environmental concerns that Sierra Club did

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[102] *See Rockwell Int'l Corp., Rocketdyne Div.* (Special Material License SNM-21), LBP-89-27, 30 NRC 265, 267 (1989).

[103] *Cf. Hydro Res., Inc.*, LBP-04-03, 59 NRC 84, 88-89; *Metro. Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-697, 16 NRC 1265, 1271 (1982). The Atomic Safety and Licensing Appeal Board in *Three Mile Island* recognized that even though the applicant or proponent of an action bears the ultimate burden of proof under 10 C.F.R. § 2.732, an intervenor must still proffer some minimal evidentiary "basis for further inquiry." ALAB-697, 16 NRC at 1271. The burden of proof in Subpart L proceedings, 10 C.F.R. § 2.1237(b), is the same as for proceedings under Subpart G, 10 C.F.R. § 2.732.

[104] Broadly, Sierra Club asserted that NFS: (1) has not demonstrated that it is qualified by reason of training and experience to use licensed material; (2) has not proposed equipment and facilities adequate to protect health and minimize danger to life and property; (3) has not proposed adequate procedures to protect health and minimize danger to life and property; and (4) is not qualified or committed to providing complete and accurate information to the NRC. *See* 59 NRC at 198-99; *see supra* notes 51-54 and accompanying text.

[105] The Staff found that NFS had demonstrated compliance with the applicable NRC regulations, and therefore was qualified to hold the requested NRC licenses. *See* Hearing File Document #49a at 4-5, 18, 76-77, 91-92; Hearing File Document #78 at 5.0-8, 6.0-1, 8.0-1 to 8.0-3, 14.0-1; Hearing File Document #100b at 19-21, 35-37, 65.

[106] *See* 10 C.F.R. § 2.1233(a).

address in their presentation, the Staff notes that the presentation lacks such supporting evidence, and instead consists entirely of counsel's arguments. Sierra Club' presentation on the technical aspects of its environmental area of concern should, therefore be afforded little weight.[107]

B. The NRC Staff's Environmental Review Complied With NEPA

1. The Standard for Requiring an EIS Focuses on Whether Environmental Impacts are Significant

Sierra Club avers that the Staff failed to comply with NEPA by failing to prepare an EIS to evaluate the impacts of the BLEU Project license amendments.[108] However, the requirement to prepare an EIS is triggered only when a proposed "major Federal action" will "significantly affect[] the quality of the human environment."[109] "The key word in this statutory phrase, of course, is 'significant.'"[110] Preparation of an EA assists an agency in determining "whether there is enough *likelihood* of significant environmental *consequences* to justify the time and expense of preparing an environmental impact statement."[111] If an action's effects on the environment are not "significant," then "[n]either the statute nor the regulations require the Staff to prepare an EIS[.]"[112] Thus, NEPA would have required the NRC Staff to prepare an EIS to support the BLEU license amendments only if the Staff had determined that a significant environmental impact would result

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[107] *See FMRI, Inc. [formerly Fansteel, Inc.]* (Muskogee, Oklahoma Facility), 59 NRC 266, 284 & n.11 (2004).

[108] *See* Written Presentation at 22-40.

[109] *See Township of Lower Alloways Creek v. Pub. Serv. Elec. & Gas Co.*, 687 F.2d 732, 739-40 (3d Cir. 1982) (citing 42 U.S.C. § 4332(2)(C)).

[110] *Id.*

[111] *Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 546 (11th Cir. 1996) (emphasis added); *River Road Alliance, Inc. v. Corps of Eng'rs of U.S. Army,* 764 F.2d 445, 449 (7th Cir. 1985) (emphasis added).

[112] *See Curators of the Univ. of Mo.*, CLI-95-1, 41 NRC 71, 124 (1995).

from the BLEU amendments.[113] The Staff conducted a review of the environmental effects of the license amendments, as documented in its EAs, and determined that the impacts of the BLEU Project were not so significant as to require an EIS.[114] The Staff complied with NEPA and the Commission's implementing regulations and correctly determined that no EIS is warranted.

2. The Staff's Environmental Review

NFS proposed to submit the BLEU license amendment applications in 3 parts: the UNB, the BPF, and the OCB/EPB. The Staff decided that NRC should perform a single NEPA review that considered the environmental impacts of the entire BLEU project to avoid "segmenting" the NEPA review. (Aff. ¶ 5.) To support this review, NFS submitted its Supplement to Applicant's Environmental Report (SAER), which covered potential impacts of all three proposed license amendments, on November 9, 2001.[115] (Aff. ¶ 5.) The SAER was supplemented on January 15, 2002, March 15, 2002, and April 12, 2002. [116]

The NRC Staff issued an Environmental Assessment dated June 30, 2002 (June 2002 EA), which assessed the potential new environmental impacts of all three license amendments.[117] The Staff's review was limited in scope to any new environmental impacts resulting from the BLEU Project and the cumulative impacts from operations at NFS' Erwin facility.[118] As part of its safety review for each amendment application, the Staff committed to perform an additional environmental

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[113] *See Curators of the Univ. of Mo.*, CLI-95-1, 41 NRC at 124. *See also City of New York*, 715 F.2d at 752 & n.20; *Hanly*, 471 F.2d at 830-31.

[114] *See* 10 C.F.R. §§ 51.20(a)(1), 51.21, 51.30(a), 51.31, 51.32(a). *See also* 67 Fed. Reg. at 66,176; 68 Fed. Reg. at 61,238; 69 Fed. Reg. at 34,201.

[115] Hearing File Document #6.

[116] Hearing File Documents #9, 13, and 15.

[117] *See* Exhibit 1.

[118] *See* Exhibit 1 at 1-1; 68 Fed. Reg. at 61,236; 69 Fed. Reg. at 34,199.

review to determine whether the June 2002 EA sufficiently considered the impacts of the individual amendment requests.[119] The Staff first examined the impacts attributable to the first license amendment, for the UNB, and concluded that the environmental impacts would not be significant and a FONSI was appropriate.[120] The Staff later reexamined the impacts of the second license amendment, for the BPF, and concluded that the environmental impacts would not be significant and supported a FONSI.[121] Finally, the Staff reassessed the impacts to the environment of the third license amendment, for the OCB and EPB, and determined that the related impacts would not be significant and supported a FONSI.[122] Because the Staff determined that none of the three license amendments would have significant environmental impacts, the Staff was not required to prepare an EIS.[123]

3. The NRC Staff Concluded that the Three License Amendments Would Not Result in Significant Environmental Impacts

Sierra Club argues that the Staff failed to take the "hard look" required by NEPA at the environmental consequences of the BLEU Project.[124] However, the Staff performed an environmental assessment of the BLEU Project as a whole and supplemental environmental reviews for each of the three BLEU Project license amendments, including the preparation of EAs, and determined that the environmental impacts arising from the license amendments, including accident impacts, would not be significant. (Aff. ¶ 6.)

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[119] *See* Exhibit 1 at 1-1; 67 Fed. Reg. at 66,173.

[120] *See* 67 Fed. Reg. at 66,176.

[121] *See* 68 Fed. Reg. at 61,238.

[122] *See* 69 Fed. Reg. at 34,201.

[123] 10 C.F.R. §§ 51.20(a)(1), 51.31.

[124] Written Presentation at 2, 37.

In assessing the significance of the environmental impacts of the amendments, the Staff considered what new impacts could be expected from both normal operations and potential accidents.[125] (Aff.¶ 7.) Because many of the potential accidents at the BLEU Project were evaluated in previous EAs prepared for the existing NFS facility,[126] the Staff did not extensively re-analyze them in its review of the BLEU Project amendments.[127] Thus, previously evaluated operations at NFS provided a baseline for the Staff's environmental evaluation of the amendments. (Aff. ¶ 7.) In addition to analyzing new environmental impacts, the Staff looked at the cumulative effect of these new impacts and the impacts from the existing NFS facility. (Aff. ¶ 7.) The Staff determined that there were some additional environmental impacts from normal operations. (Aff. ¶ 7.) These impacts were evaluated in the June 2002 EA, and the Staff concluded that these impacts were not significant. (Aff. ¶ 7.) The Staff also determined that the BLEU Project did not result in the potential for new accidents or more significant environmental impacts from accidents already possible at the existing NFS facility. (Aff. ¶ 7.) The Staff concluded that the minimal new environmental impacts from normal operations added to the existing environmental impacts from the NFS facility did not result in significant cumulative impacts. (Aff. ¶ 7.)

There are three general categories of accidents that are possible as a result of BLEU Project operations: (1) nuclear criticality; (2) radiological release; and (3) chemical release.

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[125] Where an agency determines that a proposed action will not create a "new environmental picture from that previously studied" in NEPA documents, the agency has taken the "hard look" that NEPA demands. *See Pennaco Energy, Inc. v. U.S. Dep't. of Interior*, 377 F.3d 1147, 1151, 1162 (10th Cir. 2004) (holding that an agency need not prepare a new NEPA analysis of consequences evaluated in previously issued NEPA documents); *Hodges v. Abraham,* 300 F.3d 432, 448-49 (4th Cir. 2002) (concluding new NEPA analyses not required when an agency conducts a preliminary inquiry by examining its previous NEPA documents, and it concludes that the action does not create any new significant environmental impacts).

[126] *See* Exhibit 2 at 5-8 to 5-10; Environmental Assessment for Renewal of Special Nuclear Material License No. SNM-124 (Aug. 1991) (1991 EA), attached as Exhibit 3, at 4-36 to 4-42.

[127] *See* Exhibit 1 at 1-1; 68 Fed. Reg. at 61,236; 69 Fed. Reg. at 34,199.

(Aff. ¶ 8.) For each category of accident, the Staff looked at the accidents with the most potentially significant consequences to see whether they were bounded by previous environmental assessments.[128] (Aff. ¶ 8.)

A criticality accident is the most potentially serious credible accident that could occur at the BLEU Project. (Aff. ¶ 9.) The principal product of nuclear criticality is radiation, which arises from three sources: prompt radiation, as gamma photons and neutrons resulting from the fission process; radiation from the decay of fission products produced by the reaction; and radiation from the radioactive decay of materials surrounding the reaction that have been activated by neutrons. (Aff. ¶ 9.) The projected dose from a criticality accident is based on the number of total fissions per event. (Aff. ¶ 9.) Criticality accidents for the NFS facility were evaluated in both the 1991 and 1999 EAs.[129] (Aff. ¶ 9.) The only potential difference in a criticality accident at the BLEU Project and a criticality accident at the existing NFS facility is the location of the material. (Aff. ¶ 9.) While an accident at one of the new buildings might be slightly closer to the site boundary than an accident at the existing facility, this difference would have only a minimal impact on any off-site dose. (Aff. ¶ 9.) Thus, the Staff concluded that the BLEU Project would not result in the potential for a new or more serious criticality accident. (Aff. ¶ 9.)

In addition to a criticality accident, a radiological release could be initiated by another event, such as a fire or explosion at the facility. (Aff. ¶ 10.) However, the consequences of any such radiological accident are bounded by the analysis of a criticality accident because a criticality accident assumes a much larger source term than is possible for any other credible radiological

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[128] The Staff's 1991 and 1999 EAs evaluated the environmental impacts of accidents from NFS' operations and concluded that they were insignificant. Exhibit 2 at 5-7 to 5-10; Exhibit 3 at 4-36 to 4-42. *See also* 64 Fed. Reg. 5,681, 5,683 (Feb. 4, 1999); 56 Fed. Reg. 41,149, 41,150 (Aug. 19, 1991).

[129] *See* Exhibit 2 at 5-9 to 5-10; Exhibit 4 at 4-39.

accident. (Aff. ¶ 10.) Because the dispersion mechanism is the same for any radiological release, whether initiated by criticality or some other event, and criticality has by far the largest potential source term, criticality is bounding for all potential radiological releases at the BLEU Project. (Aff. ¶ 10.) As discussed above, the Staff determined that criticality is not a new potential accident at the BLEU Project and that a criticality accident at the BLEU Project would have no greater consequences than criticality accidents evaluated previously and determined to have no significant environmental impacts. (Aff. ¶¶ 9-10.) Thus, a radiological release due to fire or explosion is bounded by previous accident analyses and is not a new potential accident associated with the BLEU Project. (Aff. ¶ 10.)

The NRC Staff also considered potential chemical accidents that could occur as a result of the BLEU Project. The Staff concluded that the most potentially serious chemical accidents were a release of 67 weight percent nitric acid, a release of uranyl nitrate (UN), and a release of ammonia. (Aff. ¶ 11.)

The Staff looked at a potential release of 67 weight percent nitric acid and concluded that such a release at the BLEU Project would be contained within a dike and would produce the same airborne plume as a 67 weight percent nitric acid spill at the existing NFS facility. (Aff. ¶ 12.) Such a spill at the NFS facility was evaluated in the 1991 EA. (Aff. ¶ 12.)

A UN spill is also not a new accident at the NFS site. (Aff. ¶ 13.) However, the storage tanks for the BLEU Project are larger than those previously used at the NFS facility. The Staff looked at a failure of two 10,000 gallon UN storage tanks (the largest UN accident considered credible) and concluded that there would be a release of 5000 gallons to the environment. (Aff. ¶ 13.) While the 5000 gallon liquid plume would be contained by the site drainage system and would not reach any surface water, there would also be an airborne plume. (Aff. ¶ 13.) The Staff determined that the airborne plume would be bounded by the release of 67 weight percent nitric

acid discussed above, because the chemical of concern in a UN spill is also nitric acid, but the concentration of nitric acid in UN is lower than 67 weight percent. For this reason, the consequences of the 67 weight percent nitric acid release discussed above bound any potential impacts from a UN tank failure (Aff. ¶ 13.)

Finally, the Staff looked at an ammonia release and concluded that while the concentrations used in the BLEU Project vary slightly from those used at the NFS facility, the entire liquid release would be contained within a dike and the airborne plume dispersion would be the same as for an aqueous ammonia release at the NFS facility. (Aff. ¶ 14.) The Staff concluded that an ammonia release at the BLEU Project would have the same off-site consequences as the ammonia used currently and in the past at the NFS facility. (Aff. ¶ 14.) Thus, the Staff concluded that an ammonia release is not a new accident, nor would such an accident have increased consequences as a result of the BLEU amendments. (Aff. ¶ 14.) A release of ammonia at the NFS facility was evaluated in the 1991 EA. (Aff. ¶ 14.)

On the basis of its review, the Staff determined that the impacts from accidents that could result from the BLEU amendments were bounded by the impacts evaluated in previous environmental reviews of NFS' licensed activities and found to be insignificant. (Aff. ¶ 15.) The Staff concluded that the environmental impacts from accidents at the BLEU Project would be no greater than those from accidents arising out of activities previously authorized for NFS' Erwin facility. (Aff. ¶ 15.) This determination informed the Staff's subsequent finding that the environmental impacts of the BLEU amendments as a whole were not significant. (Aff. ¶ 15.)

4. The NRC Staff Reviewed the Integrated Safety Analyses Required by 10 C.F.R. § 70.61 to Provide Additional Confidence That Its Environmental Review Was Sufficiently Comprehensive

On September 18, 2000, the NRC promulgated amendments to 10 C.F.R. Part 70, for licensing of the use of special nuclear material.[130] The new rule requires that certain licensees and applicants subject to 10 C.F.R. Part 70 prepare an ISA.[131] An ISA is a systematic analysis that identifies: (1) facility and external hazards and their potential for initiating accident sequences; (2) the potential accident sequences, their likelihood, and consequences; and (3) the items relied on for safety.[132]

The purpose of the requirement to perform an ISA is to provide increased confidence, through a risk-informed and performance based regulatory approach, in the margin of safety at certain facilities authorized to process a critical mass of SNM.[133] "The performance of an ISA, and the establishment of measures to ensure the availability and reliability of items relied on for safety . . . , are the means by which licensees demonstrate an adequate level of protection at their facilities."[134] By evaluating the ISA methodology and the ISA Summary, supplemented by reviewing the ISA and other information, the Commission intended for the Staff to be better able to understand the potential hazards at these facility, the applicant or licensee's plan to address these hazards, and to have increased confidence in the safety basis on which the license would be

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[130] Domestic Licensing of Special Nuclear Material; Possession of a Critical Mass of Special Nuclear Material, Final Rule, 65 Fed. Reg. 56,211 (Sept. 18, 2000).

[131] *Id.* at 56,211.

[132] *See* 10 C.F.R. § 70.4.

[133] 65 Fed. Reg. at 56,211; Domestic Licensing of Special Nuclear Material; Possession of a Critical Mass of Special Nuclear Material, Proposed Rule, 64 Fed. Reg. 41,338, 41,345 (July 30, 1999).

[134] 64 Fed. Reg. 41,345.

issued.[135] When the applicant or licensee completes the ISA, it must provide a summary of the ISA to the NRC.[136] The ISA summary must be sufficiently detailed for the NRC staff to make the determination that Part 70's performance requirements have been satisfied.[137]

The performance requirements found in 10 C.F.R. § 70.61 mandate that potential accident events identified by the ISA must meet different standards of likelihood depending on their potential consequences. High-consequence events must meet a likelihood standard of "highly unlikely,"[138] while intermediate-consequence events must meet a likelihood standard of "unlikely."[139] In addition, the risk of nuclear criticality must be limited by assuring that all processes must remain subcritical under any normal or credible abnormal conditions.[140]

Section 70.61 does not quantitatively define "unlikely" and "highly unlikely," instead opting to require licensees to define the terms in their ISAs on a case-by-case basis depending on the specific facility and processes.[141] Likelihood determinations may be based on either quantitative or qualitative methods. (Aff. ¶ 16.) A quantitative method assigns a numerical frequency to the accident sequence as a whole, based on objective failure data. (Aff. ¶ 16.) A qualitative evaluation method relies on the application of objective criteria to categorize the accident sequence into one of a number of qualitative likelihood categories. (Aff. ¶ 16.) The index method described in Appendix A to chapter 3 of NUREG-1520, the NRC's Standard Review Plan for the Review of a

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[135] *Id*. at 41,348.

[136] 10 C.F.R. § 70.65(b).

[137] 65 Fed. Reg. at 56,213-14.

[138] 10 C.F.R. § 70.61(b).

[139] 10 C.F.R. § 70.61(c).

[140] 10 C.F.R. § 70.61(d).

[141] 64 Fed. Reg. at 41,341.

License Application for a Fuel Cycle Facility, which was adopted by NFS, lies between these two approaches; it categorizes the failure likelihood of individual IROFS based on qualitative criteria, but then combines individual likelihood indices mathematically into an overall accident sequence likelihood index.[142] (Aff. ¶ 16.)

The general approach for complying with the performance requirements is that, at the time of licensing (or amendment or renewal), each hazard that can potentially affect radiological safety is identified and evaluated in an ISA by the licensee.[143] The ISA further compares the potential impact of the accidents with the three performance requirements.[144] Any and all structures, systems, components, or human actions, for which credit is taken in the ISA for mitigating (reducing the consequence of) or preventing (reducing the likelihood of) the accident in order to satisfy the performance requirements must be identified by the licensee as an IROF[145]

While ISAs are intended to ensure that the licensee complies with the safety requirements of the Atomic Energy Act and NRC regulations, the Staff noted in its EAs for the BLEU Project that its review of the ISA Summaries provided by NFS would provide additional confidence that all potential accidents had been evaluated, and that NFS' proposed processes would "function safely with no significant adverse impacts to safety or the environment[,]" before any amendments would be issued.[146] The Staff reviewed the ISA summaries submitted by NFS to confirm that the Staff had considered all potential accidents during its environmental review. (Aff. ¶ 17.) The Staff's

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[142] *See* NUREG-1520, Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility (Final Report), at 3-A-1 to 3-A-19 (Mar. 2002) (Hearing File Document #14).

[143] 64 Fed. Reg. at 41,341.

[144] *Id.*

[145] *Id.*

[146] *See* Exhibit 1 at 5-10; 67 Fed. Reg. at 66,175; 68 Fed. Reg. at 61,237; 69 Fed. Reg. at 34,200-01.

review of the ISAs revealed that there were no potential accidents that the Staff had not already considered. (Aff. ¶ 17.) The Staff thus confirmed the validity of its findings that there would be no significant impacts from accidents due to the BLEU amendments. (Aff. ¶ 17.)

Sierra Club, on pages 29-32 of its Written Presentation, points to a number of specific accidents listed in the ISA Summaries. The Staff looked at each of these accidents and confirmed that they are all bounded by the Staff's accident analyses and that none of them represent new or different accidents as a result of the BLEU Project. (Aff. ¶ 23.) For the criticality accidents cited on pages 29-31 of the written Presentation, each falls within the discussion of criticality accidents above. (Aff. ¶ 23.) None of these is a new or more serious accident than what could have occurred at the existing NFS facility. (Aff. ¶ 23.) For the chemical accidents cited on pages 31-32, each is bounded by the Staff's analysis as follows:

> Accidents from 11/14/03 ISA Summary for the OCB and EPB, Table 4-4: Sequences 3, 23, 27, 32, 38, 39, 40, 49, 57, and 59 are bounded by the Staff's analysis of an ammonia release. Accident sequences 30, 47, 48, and 55 are bounded by the Staff's analysis of a nitric acid release. Accident sequence 33 is bounded by the Staff's analysis of a criticality accident (for workers) and a nitric acid release (for individuals off-site) (Aff. ¶ 23.)
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> Accidents from the 2/6/04 ISA Summary for the BFP, Table 4-5: The chemical consequence of sequences 3, 4.1, 27.1, and 29.1 are bounded by the Staff's analysis of a nitric acid spill and the radiological consequences of sequences 27.1 and 29.1 are bounded by the Staff's analysis of a criticality accident. Sequences 22 (spill of hydrogen peroxide) and 35 (breach of a caustic tanker) would each result in liquid releases which would be contained onsite and would not result in large airborne plumes. These potential accidents are not new to the BLEU Project and are evaluated in the 1991 EA in Section 4.3.2.2. (Aff. ¶ 23.)
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> Accidents from the 10/11/02 ISA Summary for the BFP, Table 4-5: The chemical consequences of sequences 3, 21, and 29 are bounded by the Staff's analysis of a nitric acid spill and the radiological consequences of sequence 21 is bounded by the Staff's analysis of a criticality accident. Sequence 22 (spill of hydrogen peroxide) would result in a liquid release, which would be contained onsite, and would not result in a large airborne plume. This potential

> accident is not new to the BLEU Project and is evaluated in the 1991 EA in Section 4.3.2.2. (Aff. ¶ 23.)

As stated above, the Staff's previous NEPA reviews related to the renewal of NFS' license in 1991 and 1999, which bound the potential impacts from the BLEU Project amendments, concluded that the impacts of NFS' licensed activities are insignificant.[147]

5. An Accident that Meets the High or Intermediate Consequence Criteria of 10 C.F.R. § 70.61 Will Not Necessarily Create a Significant Risk of Environmental Impact

As evidence that the environmental impacts of the proposed actions must be significant, Sierra Club points to the licensee's determination in its ISAs that a number of potential accidents could result in exceedance of the "high" or "intermediate" consequence criteria of 10 C.F.R. § 70.61. However, it is not necessarily true that just because a potential accident could result in consequences that exceed the dose criteria of §70.61(b) or (c), it will have significant environmental impacts. (Aff. ¶ 18.) Section 70.61 looks strictly at potential consequences, while the Staff's NEPA analysis looks at the "risk" of significant impact by considering both consequences and likelihood of occurrence. (Aff. ¶ 18.) An accident analysis under NEPA is somewhat different than the analysis of the effects of normal operation, which are certain or at least highly likely to occur.[148] It is not certain that an accident, and thus its consequences, will ever occur; it is only the risk of an accident that might render the proposed action environmentally significant.[149] The rule of reason applied by the courts recognizes that

> there is a difference between assessing the future consequences of agency actions that 'will affect the environment,' . . . and assessing the risk that proposed actions might have environmental effects,

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[147] *See* Exhibit 2 at 5-7 to 5-10; Exhibit 3 at 4-36 to 4-42. *See also* 64 Fed. Reg. at 5,683; 56 Fed. Reg. at 41,150.

[148] *City of New York*, 715 F.2d at 746.

[149] *Id*.

> especially in the event of accidents. The fact that effects are only a possibility does not insulate the proposed action from consideration under NEPA, but it does accord an agency with some latitude in determining whether the risk is sufficient to require preparation of an EIS.[150]

Thus, an agency may "undertake risk assessment: an estimate of both the consequences that might occur and the probability of their occurrence."[151] The Staff agrees that some of the potential accidents associated with existing NFS plant operations as well as the BLEU project, were they to occur, could have significant impacts on the environment, including the health and safety of workers or residents of Erwin. However, in determining whether a potential accident creates a significant risk of environmental impacts, the Staff considers not only the potential consequences of such accidents, but also the fact that they are not likely to occur. Because the criteria for high and intermediate consequences accidents in § 70.61 are based solely on potential consequences without consideration of the likelihood that the accident will occur, an accident that could theoretically exceed these criteria will not necessarily create a significant risk of environmental impacts. (Aff. ¶ 18.)

6. The Tokai-Mura Accident Does Not Provide Evidence That An Accident At NFS Would Create a Significant Risk of Environmental Impacts

Sierra Club states that the potential off-site impacts of criticality accidents are well-known as a result of the September 30, 1999, criticality accident at the Tokai-Mura facility in Japan.[152]

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[150] *Id*. at 746 n.14 (2d Cir. 1983). The courts reject "an automatic rule requiring preparation of an EIS for every action that has any possibility, however remote, of causing serious accidental injury. Such a rule would routinely require an EIS for federal actions, since it is hard to imagine any agency action involving people or equipment that is not subject to some estimable risk of causing serious accidental injury." *Id.* at 752 n.20.

[151] *Id. See also Carolina Envtl. Study Group v. United States*, 510 F.2d 796, 799 (D.C. Cir. 1975) ("[I]t is entirely proper, and necessary, to consider the probabilities as well as the consequences of certain occurrences in ascertaining their environmental impact.")

[152] Written Presentation at 26-27.

Sierra Club goes on cite an NRC report, which discusses the consequences of the accident.[153] Aside from asserting that the accident would have been worse if it had not been brought under control or if it had involved HEU, Sierra Club offers no assessment of the similarities or differences between this facility and NFS. Significantly, Sierra Club offers only counsel's arguments that this incident is relevant, with no support or expert explanation. As discussed below, instead of bolstering the case that an inadvertent criticality would cause significant environmental impacts, the Tokai-Mura incident affirms the Staff's conclusions, in previous criticality analyses, that there is not a significant risk of environmental impacts from a criticality accident at a fuel cycle facility such as NFS. (Aff. ¶ 16.)

It is true that two workers died in the criticality accident that occurred at the Tokai-Mura fuel fabrication facility on September 30,1999, and over 400 people, including workers and members of the public, were exposed to some radiation.[154] However, except for the three workers nearest the site of the accident, the doses to workers and the public were less than 5 Rem and are not considered a significant environmental risk.[155] (Aff. ¶ 19.) In fact, most members of the public received less than 0.5 rem, and the highest dose to a member of the public was 2.4 rem.[156] (Aff. ¶ 19.) Thus, while the three workers nearest the site of the accident received a very high dose of radiation, considering the low likelihood of the event, the overall environmental risk of a Tokai-Mura type accident is low. (Aff. ¶ 19.)

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[153] *See* SECY-00-0085, Review of the Tokai-Mura Criticality Accident and Lessons Learned, Attachment 1, NRC Review of the Tokai-Mura Criticality Accident (Apr. 12, 2000), attached as Exhibit 4.

[154] *Id*. at Figure 7.

[155] *Id*.

[156] *Id*.

In addition, Sierra Club's assertion that HEU would result in greater consequences is not necessarily true. (Aff. ¶ 20.) The projected dose from a criticality accident is based on the number of total fissions per event. The number of fissions assumed by the Staff when modeling a criticality accident is determined by a number of factors, and the enrichment level of the material is just one of these factors. The most important factor in determining the total number of fissions is the volume of material present at criticality. As the volume of fissile material increases, the number of fissions increases. Because HEU will achieve criticality at smaller volumes than will LEU, a criticality resulting from HEU would most likely involve a smaller volume of fissile material than a criticality resulting from LEU. (Aff. ¶ 20.) Thus the enrichment level and volume of material offset each other in determining the total number of fissions per event. Therefore, the consequences of an event with HEU would not be larger than with LEU; the dose would actually be about the same. (Aff. ¶ 20.)

NFS also employs preventative and response strategies not in place at Tokai-Mura that reduce both the likelihood and potential consequences of a criticality accident. (Aff. ¶ 21.) At the Tokai-Mura facility, no criticality accident alarm systems were required or installed, the site had no emergency plan to respond to criticality events, workers were not trained to respond to a criticality event, and the regulator did not conduct periodic inspections of the facility.[157] (Aff. ¶ 21.) In contrast, the NFS facility has criticality accident alarms installed and an approved Emergency Plan for responding to the criticality alarms. (Aff. ¶ 21.) NFS workers are routinely trained on how to respond to criticality alarms. (Aff. ¶ 21.) The NRC performs periodic inspections at the NFS facility and has a resident inspector on site. (Aff. ¶ 21.) Thus a criticality accident at NFS would likely have smaller consequences for the public and most workers than the Tokai-Mura accident. (Aff. ¶ 21.)

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[157] *See* Exhibit 4, Attach. 1 at 3-10.

Sierra Club has offered no evidence that the potential for a criticality accident at NFS creates a significant risk of environmental impacts. As discussed above, a potential criticality is not a new accident at the NFS site, and the Staff has previously evaluated the potential consequences of a criticality accident at the NFS facility. The assumptions used by the Staff in modeling criticality accidents in the 1991 and 1999 EAs, including the total number of fissions, was consistent with what actually occurred in the Tokai-Mura accident. (Aff ¶ 22.) As discussed above, a criticality accident at the BLEU Project is bounded by previous Staff evaluations of criticality accidents for the NFS facility.

7. Being Reasonably Forseeable Does Not Make an Impact Significant

Sierra Club argues that a number of accidents identified in the ISAs are "reasonably forseeable" under the NRC's own standards.[158] Sierra Club points to a number of accidents with probabilities ranging from 10^{-3} to 10^{-5} and argues that accidents with such probabilities cannot be dismissed as remote and speculative.[159] Based on this, Sierra Club concludes that "NFS has not reduced the environmental impacts of the proposed BLEU Project below a level that is significant and therefor triggers an EIS."[160]

Despite Sierra Club's argument, the Staff does not have a quantitative standard for deciding whether an EIS must be prepared. Rather, NEPA requires that an EIS must be issued to support actions having significant environmental impacts.[161] The consideration of whether impacts meet a quantitative standard arises only in the Staff's application of the judicially-fashioned "rule of

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[158] *See* Written Presentation at 28.

[159] *Id*. at 28-32.

[160] *Id*. at 32.

[161] 42 U.S.C. § 4332(2)(C). *See also Curators of the Univ. of Mo.*, CLI-95-1, 41 NRC at 124.

reason" for assessing the impacts of federal actions.[162] Pursuant to that rule of reason, the Staff examines the quantitative likelihood that certain impacts may occur so that it may eliminate from consideration, in its environmental licensing reviews, consequences of accidents that are remote and speculative.[163]

Sierra Club seems to believe that just because an accident is reasonably forseeable, its impacts must be significant. However, Sierra Club points to no authority to support such a conclusion. Sierra Club cites to NRC decisions in the *Vermont Yankee* and *Shearon Harris* spent fuel pool expansion proceedings for the proposition that the Staff is obligated to consider, in a full EIS, impacts of potential accidents that have not been shown to be remote and speculative.[164] The

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[162] *See PFS*, CLI-02-55, 56 NRC at 348-49. *See also San Luis Obispo Mothers for Peace*, 751 F.2d at 1300.

[163] *See PFS*, CLI-02-55, 56 NRC at 348-49. *See also San Luis Obispo Mothers for Peace*, 751 F.2d at 1300.

[164] *See* Written Presentation at 6-8. In *Vermont Yankee Nuclear Power Corp.* (Vt. Yankee Nuclear Power Station), CLI-90-04, 31 NRC 333, 334 (1990), the contention at issue hypothesized an initial severe reactor accident resulting in a partial fuel damage, Mark I containment failure, and hydrogen generation and detonation in the reactor building where the spent fuel pool is situated, resulting in a complete loss of spent fuel pool water, and thus causing a self-sustaining zircaloy fuel cladding fire. *See Vt. Yankee Nuclear Power Corp.* (Vt. Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 43 (1989). Similarly, in *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), LBP-00-19, 52 NRC 85, 87, 95 (2000), the Board considered the admissibility of a contention hypothesizing an accident scenario consisting of a seven-step chain of events, beginning with a degraded core accident and culminating with a complete loss of spent fuel pool water and the initiation of an exothermic oxidation reaction, releasing high levels of radioactive materials into the environment. These types of postulated accident scenario were characterized as: "a double 'worst case' accident . . . . In other words, the two accidents at the heart of the contention are individually among the worst things that can even be hypothesized for a reactor and a spent fuel pool, respectively, in terms of potentially significant off-site consequences for the public." *Vt. Yankee Nuclear Power Corp*., ALAB-919, 30 NRC at 43; *see also Shearon Harris*, LBP-00-19, 52 NRC at 96. The impacts of the potential accidents at issue, then, in *Vermont Yankee* and *Shearon Harris*, were undeniably significant, and Sierra Club is correct to note that in those proceedings the issue litigated was whether those impacts were appropriately treated as remote and speculative by the Staff's in applying the rule of reason in its environmental review. *Vt. Yankee*, CLI-90-04, 31 NRC at 334-35; *Shearon Harris*, LBP-00-19, 52 NRC at 94-95.

decisions cited by Sierra Club hold only that, when preparing an EIS, accidents that are reasonably forseeable must be considered. It does not necessarily follow that every reasonably forseeable accident will have significant environmental impacts, which will trigger the need to prepare an EIS.[165] In fact, where an agency articulates a reasoned consideration of the environmental effects of the proposed action and concludes that the resulting impacts are not so significant as to require preparation of an EIS, the agency has taken the "hard look" required by NEPA.[166]

As discussed above, the Staff did consider the accidents cited by Sierra Club and concluded that they are not new or different than those previously evaluated in connection with the licensing of the NFS facility and thus will not cause significant environmental impacts.[167] Simply alleging that these accidents are reasonably forseeable does nothing to challenge the Staff's conclusion that they will not have significant impacts.

8. <u>The Potential Accidents at NFS Do Not Fall Within the NRC's Qualitative Criteria for Concluding That Impacts Are Significant</u>

Sierra Club asserts that the BLEU Project meets the "qualitative criteria" for determining significance set out in CEQ regulations (40 C.F.R. § 1508.27) and adopted by the NRC is NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs

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[165] 42 U.S.C. § 4332(2)(C). *See also Curators of the Univ. of Mo.*, CLI-95-1, 41 NRC at 124.

[166] *See Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1467-68 (9th Cir. 1996); *Hodges v. Abraham*, 300 F.3d 432, 446 (4th Cir. 2002).

[167] Because the Staff considered the accidents at issue here, it is irrelevant whether they could have been considered "remote and speculative." However, the Staff does not concede Sierra's argument that an accident with a likelihood of 10^{-4} or 10^{-5} could never be dismissed as remote and speculative. In fact, the Commission has expressly refused to either endorse or reject an Appeal Board determination that an accident likelihood of 10^{-4} is remote and speculative. *Vt. Yankee Nuclear Power Station*, CLI-90-04, 31 NRC at 334-35.

(Aug. 2003).[168] NUREG-1748, at 3-12 to 3-13, states that the evaluation of significance should be based on the following considerations:

- Impacts can be both beneficial and adverse. Are there significant adverse impacts despite the existence of beneficial impacts?
- Are there undesirable public health or safety effects?
- Are there unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild/scenic rivers, or ecologically critical areas?
- Are the impacts on the quality of the human environment controversial?
- Are the impacts on the human environment highly uncertain, or do they involve unique or unknown risks?
- Does the proposed action establish a precedent for future actions with significant impacts? Does it represent a decision in principle about a future consideration? Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts? Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment and cannot be avoided by describing an action as temporary or by breaking it down into small component parts.
- Does the proposed action adversely affect districts, sites, structures, or other objects listed in or eligible for listing in the National Register, or will the action result in significant destruction of scientific, cultural, or historical resources?
- Will the proposed action adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act?
- Will the proposed action cause a violation of Federal, State, or local law or requirements for the protection of the environment?

Sierra Club asserts that the BLEU Project would inflict undesirable public health or safety effects, that it has unique geographical characteristics, and that the environmental impacts are highly uncertain and involve unknown risks. Because NUREG-1748 was not issued until after the

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[168] NUREG-1748 can be found on the NRC website at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1748/.

Staff prepared the June 2002 EA and issued FONSIs for the first two license amendments, the Staff did not explicitly address these criteria in its environmental review. However, the Staff's environmental review did generally consider these factors, and, as discussed below, found that the BLEU Project did not create significant environmental impacts. (Aff. ¶ 24.)

Sierra Club appears to argue that the BLEU Project would inflict "undesirable public health or safety effects" merely because "a large community of people live in direct proximity to the NFS plant."[169] However, as discussed above, the NRC Staff determined that off-site impacts from normal operation of the BLEU Project were not significant and that the BLEU Project did not create the potential for new or more significant accidents. (Aff. ¶ 25.) The Staff also concluded that the cumulative environmental impacts from operation of the BLEU Project and the existing NFS facility were not significant. (Aff. ¶ 25.) Because there are no significant off-site impacts from normal operations or accidents, there are no "undesirable public health or safety effects" from the BLEU Project. (Aff. ¶ 25.) Thus, the Staff did not need to prepare an EIS.

Sierra Club also asserts that the long, narrow valley where NFS is located will have the potential to trap airborne releases.[170] Sierra Club provides no expert opinion to support this assertion. As a general characteristic, valleys may experience "temperature inversions" which could trap airborne pollutants in the valley. (Aff. ¶ 26.) However, the NFS selection for air dispersion modeling appears reasonably conservative. (Aff. ¶ 26.) In the absence of contrary meteorological data to support the implied claim that meteorology might be worse than conditions provided by NFS, an assumption of more stable (more conservative) meteorology for an accident consequence analysis appears to be unreasonably conservative. (Aff. ¶ 26.)

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[169] *See* Written Presentation at 33.

[170] *Id.* at 35.

Sierra Club also states that the EA did not address the environmental impacts of accidental releases on the Nolichucky River.[171] The Staff did not address the effects of an accidental release on the Nolichucky River because it determined that there is not a credible accident that results in a liquid release that would reach the river. (Aff. ¶ 27.) Such releases would be contained on site, first in each individual tank's containment and second in the site's drainage system of berms, ditches, and valves. (Aff. ¶ 27.)

Sierra Club also states that there is a relatively high level of uncertainty in the determination of impacts because so many judgments about the likelihood of accidents and effectiveness of mitigation measures are required.[172] However, because there is always uncertainty in scientific analysis, the Staff's assessments of both consequences and likelihood are based on very conservative assumptions. (Aff. ¶ 28.) As a result, to the extent that there is uncertainty in its assessment, it is likely that the Staff is overestimating, rather that underestimating, the risk of significant environmental impacts. (Aff. ¶ 28.)

VII. CONCLUSION

Based upon the foregoing, the Staff submits that it complied fully with NEPA when it performed an environmental assessment of the BLEU Project as a whole and supplemental environmental reviews for each of the three BLEU Project license amendments. The Staff further submits that it properly determined that an EIS was not required based on its conclusions that the BLEU Project would not result in the potential for new accidents or more significant environmental impacts from accidents already possible at the existing NFS facility and that the minimal new environmental impacts from normal operation of the BLEU Project added to the existing

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[171] *Id.* at 35.

[172] *Id.* at 36-37.

environmental impacts from the NFS facility would not result in significant environmental impacts.

The issuance of the three amendments should, therefore, be upheld.

Respectfully submitted,

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/RA/

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this 22nd day of December, 2004