

RAS 9409

**HARMON, CURRAN, SPIELBERG & EISENBERG, LLP**

1726 M Street, NW, Suite 600 Washington, DC 20036

(202) 328-3500 (202) 328-6918 fax

DOCKETED  
USNRC

February 18, 2005

February 18, 2005 (1:38pm)

Alan S. Rosenthal, Presiding Officer  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

*Subject:* Filing in NFS-Erwin License Amendment Proceeding, No. 70-143

Dear Judge Rosenthal,

Enclosed please find an errata sheet for the Reply Presentation that I submitted on February 11, 2005, on behalf of Friends of the Nolichucky River Valley, the State of Franklin Group of the Sierra Club, Oak Ridge Environmental Peace Alliance, and Tennessee Environmental Council. In addition, I am submitting a corrected version of the Reply Presentation, which contains the changes noted in the errata sheet. Copies of these pleadings have been served on the parties.

I am also writing to request, if you decide to schedule oral presentations as permitted by 10 C.F.R. § 2.1235, that any oral session be conducted in the vicinity of the NFS-Erwin plant. The environmental issues raised in this case are of great concern to the members of the organizations that I represent in this proceeding, and they would like to be able to attend any oral session that may be held. Many of them will have difficulty attending an oral session if it is held in Rockville. My clients are very familiar with the venues that are available in the Erwin area, and would be happy to assist you in locating a suitable facility.

Sincerely,

  
Diane Curran

Cc: Service list

Template = SECY-043

SECY-02

February 18, 2005

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE PRESIDING OFFICER

In the matter of )

Nuclear Fuel Services, Inc. )

(Materials License SNM-124) )

) Docket No. 70-143  
)  
)

**ERRATA TO INTERVENORS'  
REPLY PRESENTATION**

Intervenors, the State of Franklin Group of the Sierra Club, Friends of the Nolichucky River Valley, Oak Ridge Environmental Peace Alliance, and Tennessee Environmental Council hereby submit the following errata to their Legal and Evidentiary Reply Presentation, which was filed on February 11, 2005.

<b>Page</b>	<b>Line</b>	<b>Description of Change</b>
1	17	Insert "Valley" after "River"
1	25	Change "Bleu" to "BLEU"
3	5	Insert "the" before "Intervenors"
5 n.2	7	Delete "(emphasis added)"
6	2	Delete "that"
6	6	Indent paragraph beginning "The Staff concedes"
7	1	Insert "the" before "Intervenors"
7	15	Insert "per event" before "per year"
9	7	Change "make" to "makes"
10	6	Change "IROFs" to "IROFS"

Page	Line	Description of Change
10	6	Insert “[items relied on for safety] after “IROFS”
10	14	Insert “Supplemental” before “Environmental Report”
11	1	Change “it asserts” to “they assert”
12 n.7	17	Insert “NFS given notice of non-cited violation for” before “storage”
13	3	Change “highlight” to “highly”
13	4	Insert quotation mark after “unlikely”
13	22	Change IO/11/02” to “10/11/02”
14	9	Change “experienced” to “experience”
14	18	Change “Even” to “Event”
15 n. 9	4-5	Delete “NFS Presentation at 84”
16	1	Insert “the” before “Intervenors”
16	19	Change “dangerous a criticality,” to “dangerous as a criticality accident,”
17	8	Change “as” to “was”
17	9	Change “them chemical” to “the chemicals”
17	20	Change “doses” to “impacts”
18	9	Insert “Wheeler/Mason Declaration at 4. ” before “Without”
18	11	Insert “(emphasis added) after “ <i>Id.</i> ”
18	15	Insert “the” before “Intervenors”
20	8	Delete “the DOE for”
20	10	Change “among” to “from”
20	21	Change “arrange” to “a range”
21	20	Change “as” to “was”

Page	Line	Description of Change
21	21	Change "as" to "an"
22	8	Insert "per event per year" after "10 <sup>-3</sup> "
22	10	Insert "per event per year" after "10 <sup>-4</sup> "
22	17	Change "conduct" to "have conducted"
22	17	Delete "if and"

Respectfully submitted,



Diane Curran  
Harmon, Curran, Spielberg & Eisenberg, LLP  
1726 M Street N.W., Suite 600  
Washington, DC 20036  
202/328-3500  
FAX: 202/328-6918  
e-mail: [dcurran@harmoncurran.com](mailto:dcurran@harmoncurran.com)

Dated: February 18, 2005

## CERTIFICATE OF SERVICE

I certify that on February 18, 2005, copies of Errata to Intervenors' Reply Presentation and corrected copies of Intervenors' Legal and Evidentiary Reply Presentation were served on the following by e-mail and first-class mail:

Alan S. Rosenthal, Presiding Officer Atomic Safety and Licensing Board Mail Stop T-3 F23 U.S. Nuclear Regulatory Commission Washington, D.C. 20555 By e-mail to: <a href="mailto:rosnthl@aol.com">rosnthl@aol.com</a> <a href="mailto:Sam4@nrc.gov">Sam4@nrc.gov</a>	Office of Appellate Adjudication U.S. Nuclear Regulatory Commission Washington, D.C. 20555
Richard F. Cole, Administrative Judge Atomic Safety and Licensing Board Mail Stop T-3 F23 U.S. Nuclear Regulatory Commission Washington, D.C. 20555 By e-mail to: <a href="mailto:rfl@nrc.gov">rfl@nrc.gov</a>	Daryl Shapiro, Esq. et al. Shaw Pittman, LLP 2300 N Street N.W. Washington, D.C. 20037 By e-mail to: <a href="mailto:Daryl.Shapiro@shawpittman.com">Daryl.Shapiro@shawpittman.com</a> <a href="mailto:Sean.Barnett@shawpittman.com">Sean.Barnett@shawpittman.com</a> <a href="mailto:matias.travieso-diaz@shawpittman.com">matias.travieso-diaz@shawpittman.com</a> <a href="mailto:timothy.walsh@shawpittman.com">timothy.walsh@shawpittman.com</a>
Rules and Adjudications Branch Office of the Secretary U.S. Nuclear Regulatory Commission Washington, D.C. 20555 By e-mail to: <a href="mailto:hearingdocket@nrc.gov">hearingdocket@nrc.gov</a>	Shelly D. Cole, Esq. Michael A. Woods, Esq. Office of General Counsel U.S. Nuclear Regulatory Commission Washington, D.C. 20555 By e-mail to: <a href="mailto:sdcl@nrc.gov">sdcl@nrc.gov</a> <a href="mailto:Maw2@nrc.gov">Maw2@nrc.gov</a>
Neil J. Newman, Esq. Nuclear Fuel Services 1700 Rockville Pike, Suite 400 Rockville, MD 20852	



\_\_\_\_\_  
Diane Curran

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE PRESIDING OFFICER

In the matter of

Nuclear Fuel Services, Inc.

(Materials License SNM-124)

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Docket No. 70-143

**LEGAL AND EVIDENTIARY REPLY 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**

Diane Curran  
Harmon, Curran, Spielberg & Eisenberg, LLP  
1726 M Street N.W., Suite 600  
Washington, DC 20036  
202/328-3500  
FAX: 202/328-6918  
e-mail: [dcurran@harmoncurran.com](mailto:dcurran@harmoncurran.com)

Counsel to Intervenors

February 11, 2005  
[corrected February 18, 2005]

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[corrected February 18, 2005]

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE PRESIDING OFFICER

In the matter of )  
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Nuclear Fuel Services, Inc. ) Docket No. 70-143  
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(Materials License SNM-124) )  
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**REPLY 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**

**I. INTRODUCTION**

On October 14, 2004, pursuant to 10 C.F.R. § 2.1233, the State of Franklin Group of the Sierra Club, Friends of the Nolichucky River Valley, Oak Ridge Environmental Peace Alliance, and the Tennessee Environmental Council (hereinafter "Intervenors") filed a legal and evidentiary presentation in opposition to Nuclear Fuel Services Inc.'s ("NFS") application for three license amendments that would allow it to operate the Blended Low Enriched Uranium ("BLEU") Project at its nuclear fuel cycle facility in Erwin, Tennessee. 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 (hereinafter "Intervenors' Presentation").

Intervenors demonstrated that in refusing to prepare an Environmental Impact Statement ("EIS") for the proposed BLEU Project, the Staff of the U.S. Nuclear Regulatory Commission ("NRC" or "Commission") unlawfully disregarded NFS' own quantitative risk estimates showing that the probability of a serious accident at the BLEU Project falls within a range that is considered reasonably foreseeable for purposes of requiring an EIS. By failing to take a "hard look" at the environmental implications of this data, the Staff violated the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4331 et seq. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

The responses filed by the NRC Staff and NFS fail to provide any evidence that the Staff considered NFS' quantitative accident probability estimates in its environmental review for the BLEU Project. NRC Staff Response to the Legal and Evidentiary Presentation of the Sierra Club et al. (December 22, 2004) (hereinafter "NRC Staff Presentation"); Applicant's Written Presentation in Response to Intervenors' Written Legal and Evidentiary Presentation (December 22, 2004) (hereinafter "NFS Presentation"). Moreover, they show that the Staff has failed to give specific consideration to the impacts of accidents to BLEU Project workers. Thus, the Staff and NFS presentations provide no defense for the Staff's arbitrary and capricious refusal to prepare an EIS in this case.

## II. ARGUMENT

### A. The NRC Staff and NFS Carry the Burden of Proving that the Staff Took a "Hard Look" at the Environmental Impacts of the BLEU Project.

At the outset, the NRC argues that the Intervenor's presentation should be given "little weight" because it is not supported by an expert declaration. NRC Staff Presentation at 19, citing *FMRI, INC. [formerly FANSTEEL, INC.]* (Muskogee, Oklahoma Facility), LBP-04-08, 59 NRC 266, 284 & n.11 (2004). As the Presiding Officer recognized in *FMRI*, however, an intervenor is entitled to "endeavor to establish, by argumentation without more, that the Staff's and Licensee's expert testimony was so flawed or unpersuasive as to warrant receiving little, if any, weight." *Id.* at 271.

It is also important to recognize that it is the NRC Staff and not the Intervenor which bears the burden of proving that the Staff took a "hard look" at the environmental consequences of its actions, by providing a "convincing explanation" of the basis for its decision. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1211 (9th Cir. 1998) *cert. denied sub nom. Malheur Lumber Co. v. Blue Mountains Biodiversity Project*, 527 U.S. 1003 (1999).<sup>1</sup> Therefore, even without presenting testimony of their own, the Intervenor must prevail if the Staff's Presentation fails to show that its refusal to prepare an EIS is based on reasoned consideration of NFS' quantitative probability estimates for serious potential accidents at the BLEU Project. As discussed below in

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<sup>1</sup> As the Licensing Board held in *Louisiana Energy Services* (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 338-39 (1996), the Staff has the burden of defending its NEPA studies, while the applicant bears the burden of defending the Environmental Report.

Section II.B, the Staff's Presentation fails to show that the Staff gave *any* consideration to NFS' probability estimates in refusing to prepare an EIS.

**B. The Staff and NFS Have Failed to Carry Their Burden of Showing That BLEU Project Impacts Are Insignificant.**

As NFS points out, the NRC Staff must make its decision regarding whether to prepare an EIS for a particular project "based on existing materials available to it, probabilistic and otherwise, supplemented by additional information it might obtain from the Applicant in an environmental report or through requests for additional information." NFS Presentation at 11 n.12, citing *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), LBP-01-9, 53 NRC 239, 252, affirmed, CLI-01-11, 53 NRC 370 (2001) (hereinafter "*Carolina Power & Light*"). As the Licensing Board also pointed out in another decision in the same case, quantitative information carries especially great weight in an environmental analysis. *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), LBP-00-19, 52 NRC 86, 97 (2000), affirmed, CLI-01-11, 53 NRC 370 (2001) (observing that the Commission has expressed a firm intent to determine what accidents are "remote and speculative" by "examining the probabilities inherent in a proposed accident scenario.") *See also* 10 C.F.R. § 51.45(c), which requires an applicant's environmental report to quantify the various factors considered "to the fullest extent practicable;" and 10 C.F.R. § 51.71(d) which contains the same requirement for draft environmental impact statements.

In the course of deciding whether to prepare an EIS for the proposed BLEU Project, the NRC Staff had available to it Integrated Safety Assessment ("ISA")

Summaries prepared by NFS in compliance with 10 C.F.R. § 70.61. The ISA Summaries provided quantitative probability estimates of between  $10^{-4}$  and  $10^{-5}$  per accident per year for “high consequence” accidents and quantitative probability estimates of  $10^{-3}$  per accident per year for “intermediate consequence” accidents as those terms are defined in 10 C.F.R. § 70.61.<sup>2</sup> See *Intervenors’ Presentation* at 28-32. The pivotal question in this case is whether, in refusing to prepare an EIS for the proposed BLEU Project, the NRC Staff gave this information reasoned consideration. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d at 1211.

The NRC Staff claims to have reviewed the ISA Summaries to confirm that the potential environmental impacts of accidents had been adequately evaluated in the EAs that it prepared for the BLEU Project. Affidavit of Mary T. Adams, Michael A. Lamastra, and Donald E. Stout, par. 17 (December 22, 2004) (hereinafter “NRC Staff Affidavit”). The Staff provides no evidence, however, to support this claim.<sup>3</sup> Neither the EAs prepared by the NRC Staff for the BLEU Project nor the Staff’s Evidentiary Presentation gives any indication that the Staff made a determination that accident

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<sup>2</sup> The NRC has explained that “high consequence events” would include “radiation doses to a worker or an individual located outside of the controlled area at levels with clinically observable biological damage or concentrations of hazardous chemicals produced from licensed material at which death or life-threatening injury could occur.” Proposed Rule, Domestic Licensing of Special Nuclear Material; Possession of a Critical Mass of Special Nuclear Material, 64 Fed. Reg. 41,338, 41,342 (July 30, 1999) “Intermediate consequences” would include “accidental exposure of a worker or an individual outside of the controlled area to levels of radiation of hazardous chemicals that generally correspond to permanent injury to a worker, transient injury to a non-worker, or significant release of radioactive material to the environment.” *Id.* at 41,343.

<sup>3</sup> The Staff also claims that there were no potential accidents that the Staff had not already considered. *Id.* Intervenors have no opinion on the accuracy of this statement, which is not in dispute.

probabilities of between  $10^{-3}$  and  $10^{-5}$  per event per year are not reasonably foreseeable for purposes of triggering an EIS, where such accidents could cause impacts ranging between permanent health damage and death.

**1. The NRC Staff fails to support its claim that it reviewed NFS' quantitative accident probability estimates.**

The Staff concedes that “some of the potential accidents associated with existing NFS 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.” NRC Staff Presentation at 31, NRC Staff Declaration, par. 18. But the Staff contends that when the likelihood of such accidents is also taken into account, their “overall risk” is low and therefore their impacts are not significant. *Id.* The Staff’s argument is defective, however, because it completely fails to grapple with the legal significance of NFS’ quantitative accident probability estimates under NEPA.

The Staff’s lawyers concede that under NEPA’s “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.” NRC Staff Presentation at 35. But nowhere in the Staff’s Presentation or the supporting Staff affidavit is it possible to find a discussion of whether the probability estimates provided by NFS for high consequence and intermediate consequence accidents are high enough to warrant consideration of those accidents in an EIS. Instead, the Staff attempts to avoid the issue by grossly mischaracterizing the Interveners’ position. According to the Staff, “Sierra Club seems to believe that just because an accident is reasonably foreseeable, its impacts must be



significant.” To the contrary, the Intervenor specifically identified accidents that are *both* reasonably foreseeable (*i.e.*, have estimated probabilities of occurrence of between  $10^{-3}$  and  $10^{-5}$  per event per year) *and* have “high” or “intermediate” consequences as defined in 10 C.F.R. § 70.61, *i.e.*, death, life-threatening injuries, permanent health damage, or significant radiological releases. *See* Intervenor’s Presentation at 28-32.

Thus, the record of this proceeding does not contain a shred of evidence that the Staff “examine[d] the quantitative likelihood” that significant accident impacts would be caused by the BLEU Project, in order to eliminate those accidents from consideration in an EIS. *See* NRC Staff Presentation at 35. In fact, there is no evidence in this record that the NRC Staff gave any consideration whatsoever to NFS’ estimates of the probability of high and intermediate consequence accidents in deciding not to prepare an EIS.

**2. The Staff and NFS disregard impacts to workers and blur them with impacts to offsite members of the public.**

NFS argues that for high-consequence accidents with an estimated probability between  $10^{-4}$  and  $10^{-5}$  per event per year, the Intervenor “overlook” the fact that 10 C.F.R. § 70.61 defines accident consequences on different scales for workers and members of the public. NFS Presentation at 70. According to NFS, a “high-consequence event to an on-site worker, such as a criticality accident, could well be a low consequence event for an off-site member of the public.” *Id.* This argument fails in several respects.

First, the argument implicitly and improperly suggests that in deciding whether to prepare an EIS, the NRC may ignore accidents with high consequences to workers. The size of the workforce that could be affected by a serious accident at the NFS site is considerable: the June 2002 Environmental Assessment (“EA”) for the BLEU Project

states that NFS has 653 employees, most of whom live in the four counties that directly surround the site. 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 2-4 (Staff Exhibit 1) (hereinafter "June 2002 EA"). The 1991 EA for renewal of NFS' license indicates that about 390 people work on the average day shift, and an average of 96 people work each evening, weekend, and midnight shift. 1991 Environmental Assessment for Renewal of Special Nuclear Materials License No. SNM-124, Nuclear Fuel Services Inc., Erwin Plant at 2-5 (August 1991) (Staff Exhibit 3) (hereinafter "1991 EA"). NFS' implicit suggestion that the impacts of reasonably foreseeable serious accidents on these workers can be disregarded for purposes of preparing an EIS is inconsistent with the plain terms of NEPA, which require consideration of impacts to the "human environment," without regard to whether the humans are workers or offsite members of the public. 42 U.S.C. § 4332(C). *See also Public Service Company of Colorado v. Andrus*, 825 F. Supp. 1483, 1496 (D. Idaho 1993) (requiring preparation of an EIS for spent fuel shipments where EA had failed to address, *inter alia*, the environmental impacts to employees of handling and storing the spent fuel).

NFS' argument is also inconsistent with standard NRC practice, which is to address the environmental impacts of proposed actions on workers. Figure 3 of NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs (August 2003), entitled "Identifying and analyzing impacts in NEPA

documents,” lists “increased radiation dose to workers and/or members of the public” as factors that should be considered in preparing an environmental assessment. *Id.* at 3-11.<sup>4</sup>

Second, although NFS correctly accuses the Intervenors of failing to provide a technical analysis that distinguishes between worker impacts and offsite impacts, this is only because the Staff and NFS have failed to provide the information that is needed to perform such an analysis. The 2002 EA, for example, contains no data regarding the likelihood or consequences of accidents to workers or the public, let alone makes any distinction between them. In fact, the EA concedes that “[a]ccident impacts are considered only at a general level of detail.” *Id.* at 5-1. Thus, at page 5-7, the EA states that an uncontrolled release of radioactive material and hazardous chemicals “could pose a risk to the environment as well as to workers and public health and safety.”<sup>5</sup>

Nor do NFS’ ISA Summaries contain separate analyses of accident likelihood and consequences for workers and offsite members of the public. For example, in Section 4.2.1 of the October 11, 2002, ISA Summary, entitled “Criticality Safety Consequence

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<sup>4</sup> Moreover, discussion of environmental impacts to workers from nuclear facility accidents is a standard part of EISs for NRC-licensed and DOE facilities. *See, e.g.*, NUREG-1767, Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina at 4-40, 4-45 – 4-52 (January 2005); NUREG-1484, Final Environmental Impact Statement for the Construction and Operation of Claiborne Enrichment Center, Homer, Louisiana at 4-56, 4-58 – 4-65 (August 1994); DOE/EIS-236-S2, Draft Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility at 5-54 – 5-63 (May 2003); DOE/EIS-0240-S, Disposition of Surplus Highly Enriched Uranium Final Environmental Impact Statement at E-61 – E-69 (June 1996) (hereinafter “1996 Programmatic EIS”).

<sup>5</sup> The June 2002 EA promises that “[d]etailed accident analyses (an integrated safety assessment) will be provided by NFS in a forthcoming license amendment request related to the BLEU Project.” *Id.* But no subsequent EA for the BLEU contains any specific data or discussion of the BLEU Project’s environmental impacts to workers.

Analysis,” NFS states that the criticality scenarios considered credible for the UA1 Dissolution and Downblending processes are summarized in Table 4-9, along with NFS’ criticality risk assessment results. Integrated Safety Analysis for Uranium Aluminum Dissolution and Downblending Processes in the Blended Low-Enriched Uranium Preparation Facility, Revision 0 at 4-2 (October 11, 2002) (hereinafter “10/11/02 ISA Summary”). According to NFS, “[f]or all credible criticality scenarios, IROFS [items relied on for safety] are defined and risk-indexed to ensure that a criticality is highly unlikely as documented in Table 4-9.” *Id.* Table 4-9, however, does not make any distinctions between consequences to workers and the offsite public. Thus, to the extent that NFS suggests in its Presentation that the high-consequence accidents would affect only workers, it is impossible to verify this assertion from the ISA Summaries.

In any event, the one document that provides a limited amount of quantitative information in a way that onsite impacts can be distinguished from offsite impacts -- NFS’ 2001 Supplemental Environmental Report for the BLEU Project -- states that consequences of criticality accidents at the site boundary are “high.” B.M. Moore, Nuclear Fuel Services, Inc., Letter to U.S. Nuclear Regulatory Commission, “Supplemental Environmental Report for Licensing Actions to Support the BLEU Project,” Tables 1 and 2 at 2-6 (November 9, 2001). Tables 1 and 2 report the results of NFS’ accident assessment under 10 C.F.R. § 70.61 with respect to impacts at the “site boundary.” *Id.* and note b. The consequences of a criticality at the site boundary are reported to be “high,” as the term is used in 10 C.F.R. § 70.61. Tables 1 and 2 do not represent that criticality accidents are “not credible” (*i.e.*, having a probability of  $10^{-6}$  per

event per year or less, according to NFS' classification scheme). Instead, they assert that the accidents are "highly unlikely" in probability, *i.e.*, less than or equal to  $10^{-4}$  per event per year. Thus, the very small amount of available information that distinguishes offsite impacts from worker impacts indicates that offsite impacts of criticality accidents with a probability as high as  $10^{-4}$  per event per year are potentially severe.<sup>6</sup>

Nor has the NRC Staff addressed the significance of the information in Tables 1 and 2. Although the June 2002 EA references Tables 1 and 2 in its discussion of accident impacts, *id.* at 5-8 and 5-9, the Staff's Presentation does not address the significance of the tables with respect to its finding of no significant impact. Instead, the Staff cites EAs prepared in 1991 and 1999 for the proposition that the BLEU Project "would not result in the potential for a new or more serious criticality accident." NRC Staff Presentation at 23, citing NRC Staff Affidavit, par. 9. The Staff does not make any attempt to address the more obvious and relevant question of whether the information in Tables 1 and 2 shows that the conclusions reached by the Staff in 1991 and 1999 were incorrect.<sup>7</sup>

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<sup>6</sup> Notably, NFS does not deny that reasonably foreseeable criticality accidents at the BLEU Project could have high consequences to members of the offsite public, as that term is used in 10 C.F.R. § 70.61(b). Instead, NFS equivocally states that an accident with high-consequences to a worker "could well be" a low-consequence accident for an offsite member of the public, that a high-consequence accident "would not necessarily" pose a risk of death to an off-site member of the public, and that an intermediate consequence event "might not pose" a risk of permanent injury to an offsite member of the public -- but it stops short of stating that criticality accidents cannot have high offsite consequences. NFS Presentation at 70.

<sup>7</sup> Both NFS and the NRC Staff argue that a criticality accident at the NFS plant would "likely have smaller consequences for the public and most workers than the Tokai-Mura accident" that killed two workers and contaminated 200 offsite individuals with radiation in excess of Part 20 limits for public exposures. NFS Presentation at 76, NRC Staff Presentation at 33. According to the Staff, NFS employs preventative and response strategies that were not in place at Tokai-Mura, such as criticality alarms and emergency

**3. It is self-evident that NFS accident likelihood estimates are quantitative.**

NFS tries to excuse the Staff from considering NFS' quantitative accident probability estimates by arguing that they are not quantitative at all. NFS Presentation at 7, 33. This argument is flatly contradicted by NFS' own licensing documents.

NFS argues that the ISA Summaries “do not present quantitative probabilities for accident frequencies and cannot be interpreted to stand for probabilities that specified events will take place.” *Id.* at 8. According to NFS:

The BLEU Project's ISA Summaries provide qualitative envelopes or bounding maxima that demonstrate that potential accident sequence likelihoods have been reduced to an acceptably low level – below the defined thresholds in NRC's safety regulations.

NFS Presentation at 37. To illustrate its point, NFS quotes the Safety Evaluation Report (“SER”) for the first license amendment as follows:

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planning. *Id.* The Staff misses the point that IROFS such as criticality alarms already were taken into account in NFS' ISAs in evaluating the overall likelihood of accidents. *See* Intervenors' Presentation at 36.

The NRC Staff's argument also ignores the fact, which must be taken into account in any accident analysis conducted for safety or environmental purposes, that safety systems may fail or may be operated improperly. *Id.* Indeed, NFS has been cited by the NRC for various permit violations related to criticality control. *See, e.g.*, Letter from Martin J. Virgilio, Director, NRC Office of Nuclear Material and Safeguards to Dwight Ferguson, President, Nuclear Fuel Services, re: Notice of Violation (NRC Inspection Report 70-143/2001-203) (September 24, 2001) (NFS cited for failure to provide adequate criticality alarm system coverage for up to 20 kg of HEU for approximately 46 days); Letter from David A. Ayers, Chief, NRC Fuel Facilities Branch to Dwight Ferguson, President, Nuclear Fuel Services, re: Notice of Violation (NRC Inspection Report 70-143/2002-09) (January 7, 2003) (NFS cited for storing too many nuclear material storage containers in one location); letter from Joseph Glitter, Chief, NRC Special Projects and Inspections Branch to Dwight Ferguson, President, NFS, re: Inspection Report No. 70-143/2003-205 (November 26, 2003) (NFS given notice of non-cited violation for storage of two cans of fissile material in a manner that violated mass limit of 6 kg for material authorized to be stored in that area).

NFS also applied qualitative criteria for its use of the terms, “highly unlikely” and “unlikely.” Similar to NFS’s application of qualitative criteria for “credible,” they defined the likelihood of “highly unlikely” to be an index of -4 and “unlikely” an index of -3, instead of a frequency per accident per year. These initiating event frequencies were based on past experience, engineering judgment, analytical data, industry accepted values, and other information if available.

NFS Presentation at 37, quoting Safety Evaluation Report: Nuclear Fuel Services, Inc., Amendment 39 (TAC Nos. L31688, L31739, L31721 and L31748) – to Authorize Uranyl Nitrate Building at the Blended Low-Enriched Uranium Complex and Possession Limit Increase at 47 (July 7, 2003) (emphasis added by NFS).

NFS’ argument is simply contradicted by the information provided in the ISA Summaries about how the accident sequence likelihood indices were derived. In fact, the ISA reviewed in the above-quoted SER shows that NFS’ qualitative categorization of accidents as “high unlikely” or “unlikely” is grounded in quantitative probability estimates. As discussed in the 10/11/2002 ISA Summary, NFS began its analysis with probability estimates for accidents it considered credible:

An Initiating Event Frequency Index is assigned to each credible accident scenario based on past experience, engineering judgment, analytical data, industry acceptable values, and/or any other applicable information. *Initiating Event Frequency is defined as the probability of occurrence of the initiating event or initiating set of conditions.* The index assignments are defined in **Table 5-3.**

10/11/02 ISA Summary at 5-5 (emphasis added).

Table 5-3, in turn, assigns a “frequency index” to each quantitative failure frequency. For instance, a failure frequency of one failure in 100,000 years is assigned a frequency index of -5; a failure frequency of one failure in 10,000 years is given a

frequency index of -4; and a failure frequency of one failure in 1,000 years is given a frequency index of -3.<sup>8</sup>

NFS also estimated the probability that an item relied on for safety (“IROFS”) will fail:

Each IROFS is assigned an IROFS Failure Frequency Index as specified in Table 5-4. The Failure Frequency is defined as the probability that the identified controls will prevent or mitigate the accidental consequence given the initiating event (or set of conditions) occurs. The Index is assigned to each IROFS based on industry accepted values, past experience, engineering judgement (sic), analytical data, and/or any other applicable information.

10/11/02 Summary at 5-6. NFS then integrated that information with its probability estimates for initiating events:

To demonstrate compliance with 10 CFR 70.61, all credible accident scenarios upon application of IROFS require a likelihood determination. A Controlled Likelihood and an Uncontrolled Likelihood are calculated to demonstrate the relative importance of the IROFS in preventing or mitigating the accident sequence to meet the performance requirements. A Controlled Likelihood Index T is calculated by summing the Initiating Event Failure Frequency Index and the IROFS Failure Frequency Index(s). If the initiating event is an IROFS failure, then the Controlled Likelihood Index T is calculated by summing the IROFS Failure Frequency Indexes and the Failure Duration Index. An Uncontrolled Likelihood Index T is calculated by using the Initiating Event Failure Frequency Index or the IROFS Failure Frequency Index as applicable. Controlled and Uncontrolled Likelihood Categories are then assigned from Table 5-6 based on the respective Likelihood Index.

10/11/02 ISA Summary at 5-8. Thus, contrary to NFS’ assertion, the indices used by NFS for likelihood of initiating events and IROFS failure are grounded in quantitative

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<sup>8</sup> As permitted by 10 C.F.R. § 70.61, NFS has also assigned its probability estimates to descriptive categories. For instance, NFS characterizes a failure frequency of one failure in 100,000 years as “not credible;” a failure frequency of one failure in 10,000 years as “physically possible, but not expected to occur;” and a failure frequency of one failure in 1,000 years as “not expected to occur during plant lifetime.” 10/11/02 ISA Summary at 5-6. But the fact that NFS categorizes quantitative probability estimates according to qualitative categories does not negate their essential quantitative character.



probability estimates. The NRC Staff could have and should have used these probability estimates to evaluate whether serious accidents at the NFS facility are reasonably foreseeable. *Carolina Power & Light Co.*, 53 NRC at 252.<sup>9</sup>

**4. NFS fails to demonstrate that the likelihood of serious accidents has been reduced to a level of probability that is remote and speculative.**

NFS also contends that Intervenors' reliance on NFS' accident probability estimates is mistaken because the "T values" in the Controlled Likelihood Index "only indicate the likelihood of accident sequences so far as necessary to satisfy NRC safety regulations under 10 C.F.R. Part 70," and that therefore they are "bounding values." NFS Presentation at 38. Thus, a Controlled Likelihood Index T value of -4 "shows an approximate accident frequency of less than  $10^{-4}$ , and a T value of -5 shows an approximate accident frequency of less than  $10^{-5}$ , etc." *Id.* (emphasis in original). According to NFS, the ISA Summaries "do not summarize the entire universe of safety controls, and thus do not represent the total margin of safety in place for each accident sequence." *Id.* at 39.

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<sup>9</sup> In the *Carolina Power & Light* case, the Licensing Board admitted a contention that asserted the NRC Staff must prepare an EIS to address the environmental impacts of a severe accident in the Shearon Harris spent fuel pool. As observed by NFS at page 84, the potential consequences of a spent fuel pool fire are cataclysmic. NFS suggests that because the magnitude of an accident at NFS would be much smaller under any circumstances, accident risks do not warrant consideration in an EIS. *Id.* Clearly, however, the potential consequences of an accident at the NFS plant include harms ranging from immediate death to long-term illness. These impacts cannot be dismissed as insignificant. Moreover, NFS' argument is based on generalizations. Neither NFS nor the NRC Staff has attempted to describe the location of people who would be affected, the number of people who would be affected, and the severity of their injuries.

NFS addresses the examples provided in the Intervenor's Presentation at pages 28-30, and argues that the probability of all of these accidents has been reduced to a level much lower than  $10^{-4}$ . But NFS fails to show that it has done a systematic analysis, approved by the NRC as part of its NEPA review, to thoroughly demonstrate that the potential for all foreseeable high and intermediate consequence accidents has been reduced to a level that renders them incredible.

Moreover, with respect to the alleged over-conservatism of NFS' analysis of the potential for a criticality accident -- which the NRC Staff has described as "the most potentially serious credible accident that could occur at the BLEU Project [NRC Presentation at 23] -- some of NFS' reasoning is fallacious on its face. NFS asserts, for example, that its nuclear criticality accident analyses are "overly conservative" because they assume that hand-held containers contain 12 kg of HEU "when in fact they contain an average of 9 kg and no more than 11 kg." NFS Presentation at 40-41, citing Declaration of Robert L. Frost at 4-5 (December 14, 2004). Mr. Frost implies that any realistic risk analysis for a criticality accident should assume that a container contains the "average" amount of 9 kg, rather than 12 kg. *Id.* But Mr. Frost does not cite any prohibition against filling the containers to their capacity, which is 11 kg. Where the quantity of HEU that is in a given container is crucial to the analysis of the likelihood of an accident as dangerous as a criticality accident, it cannot be considered remotely acceptable to make an educated guess at the average quantity of HEU that will be in a given container. A reasonable degree of conservatism must be maintained by assuming that the container is filled to its capacity.

Nor is it appropriate to suggest that the ISA Summaries' likelihood estimates for a criticality accident are "overly conservative" because they are based on inflated assumptions regarding the amount of HEU that will be present in each container. *Id.* If NFS did not use reasonably accurate assumptions in its safety analysis, the solution is to re-do the analysis with correct figures, not to attempt to dismiss the results of the analysis based on unsupported qualitative assertions about their validity.

NFS also argues that with respect to chemical accident analyses, all of the ISA analyses assumed that the exposed individual was at the NFS property line and that the individual was continuously exposed to the chemicals for one hour. NFS Presentation at 72, citing Wheeler/Mason Declaration at 4. NFS further asserts that:

Assessments made assuming that people were exposed at realistic locations and for realistic times would have reduced exposures by more than a factor of 10 and would have reduced the potential consequences to members of the public for *many if not all* possible accidents below a level where serious health effects would occur.

NFS Presentation at 72 (emphasis added). As discussed above in Section II.B, however, no information can be found in the ISA Summaries or the June 2002 EA regarding the location where the consequences of postulated accidents were calculated. Instead, both NFS and the Staff blur the distinction between onsite impacts and offsite impacts. *Id.* Thus, NFS' representations regarding fenceline impacts have no support in the environmental or licensing documents that have been provided to support the NRC Staff's finding of no significant impact. Moreover, as the italicized words in the above quotation demonstrate, NFS is not prepared to say that *no* serious health effects would be caused by an offsite release.

NFS also asserts that it performed a worst-case bounding assessment of a chemical release at facilities associated with the BLEU Project and elsewhere at the NFS site, which assumed release of the entire inventory of all chemicals present at the BLEU Project in any significant quantity. NFS Presentation at 72. According to NFS, in no case did a chemical release result in an off-site fatality. *Id.* NFS' Presentation provides no details in support of this assertion, and none can be found in the cited Wheeler/Mason Declaration. This declaration gives no quantitative information about the release. The only information that is given is that the release was smaller than what NFS assumed to be the exposure level for immediate fatalities, "5 times EPRG levels." Wheeler/Mason Declaration at 4. Without additional explanation, the declaration also states that "even if a maximum unmitigated consequence from a single accident scenario were >ERPG-3, this exposure *might endanger life* but does not result in immediate fatalities." *Id.* (emphasis added). NFS fails to explain why life-endangering chemical exposures would not qualify as significant environmental impacts.

#### **5. Discussion of mitigative measures belongs in an EIS.**

NFS also argues that the Intervenors fail to take into account consequence-mitigating effects that were not accounted for in the ISA summaries. NFS Presentation at 71. Mitigative measures such as the steps suggested in NFS' Presentation, however, belong in an EIS that is subject to public comment regarding their adequacy to minimize or avoid the effects of serious accidents at the NFS plant, *after* the environmental impacts of the proposed action have been fully addressed in an EIS. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150-51 (9<sup>th</sup> Cir. 1998).

**C. Past Environmental Reviews Do Not Support the NRC Staff's Refusal to Prepare an EIS for the Proposed BLEU Project.**

NFS argues that the NRC Staff's refusal to prepare an EIS is supported in part by past NEPA reviews in which the environmental impacts of the BLEU Project or something like it were evaluated. NFS Presentation at 14-20. In particular, NFS points to two past reviews: the 1996 Programmatic EIS prepared by the U.S. Department of Energy to evaluate HEU downblending alternatives, and the 1999 EA prepared by the NRC Staff for renewal of NFS' license (Staff Exhibit 2). For several reasons, neither of these environmental studies supports the NRC Staff's decision not to prepare an EIS for the proposed BLEU Project.

**1. ISA Summaries did not exist in 1996 or 1999.**

First and foremost, at the time the 1996 DOE Programmatic EIS and the 1999 NRC EA were prepared, the NRC did not have the information in the ISA Summaries. NFS did not even begin to provide that information to the NRC until 2002, and did not finish producing it until 2004. For the first time, the ISA Summaries provided quantitative probability estimates for serious accidents at the NFS-Erwin plant. While the information was prepared in order to satisfy a safety regulation, it provides relevant information to inform NEPA decisions as well. Indeed, in promulgating the regulation, the NRC recognized that integrated safety assessments were needed to "provide for increased confidence in the margin of safety at SNM facilities that possess more than a critical mass of SNM," and to "ensure that workers, the general public, and the environment are protected from radiological and certain chemical hazards associated with plant operation." SECY-00-0111, Rulemaking Issue Affirmation, Final Rule to Amend

10 C.F.R. Part 70, Domestic Licensing of Special Nuclear Material, Attachment 8: Environmental Assessment and Finding of No Significant Impact for Amendments to 10 CFR Part 70 at 3 (April 2000). As discussed above in Section II.B, the NRC was required to consider this important new quantitative information in determining whether to prepare an EIS for the proposed BLEU Project.

**2. DOE Programmatic EIS Had Different Purpose and Used Generic Accident Data.**

Second, the purpose of and data used in the 1996 Programmatic EIS were very different than the purpose of and data used in the NRC Staff's EAs for the BLEU Project. The purpose of the 1996 Programmatic EIS was to choose from an array of four alternatives for processing HEU at four different possible sites, including the NFS-Erwin site, DOE's Y-12 site at the Oak Ridge Reservation in Tennessee, DOE's Savannah River Site, and the Babcock & Wilcox Naval Nuclear Fuel Division Facility in Lynchburg, VA. *Id.* at 1-4. Nothing in the Programmatic EIS indicates that DOE examined any alternatives for the specific purpose of avoiding or mitigating the environmental impacts of HEU downblending at the NFS -Erwin site. Instead, the Programmatic EIS compared different volumes of HEU production and the relative suitability of the four sites. In contrast, the purpose of the NRC's environmental study in this case is to examine the site-specific impacts of the proposed BLEU Project at the Erwin site. June 2002 EA at 1-2. If the impacts were found to be significant, the NRC Staff would be required to look at a range of alternatives for avoiding or mitigating those impacts at the NFS site.

Moreover, the Programmatic EIS is concededly generic. The data used to evaluate the environmental impacts of HEU conversion and downblending at each candidate site:

were based on data reports prepared specifically for those processes by the Nuclear Materials Disposition Program Office at Y-12 (OR LMES 1995a, OR LMES 1995b, OR LMES 1995c, and OR LMES 1995d). These reports provide information regarding the UNH, metal and UF6 blending processes, *but do not focus on site-specific processes at the candidate sites.*

Programmatic EIS at 2-12 (emphasis added). With respect to severe accident analyses, “generic scenarios and source terms prepared by Y-12 were applied to each candidate site to determine site-specific impacts.” *Id.* at 2-14. In contrast, the data used in the June 2002 EA were intended to be specific to the NFS-Erwin site. As discussed in the June 2002 EA:

The DOE has prepared an EIS which evaluated several options for the disposition of surplus HEU. The option chosen in that EIS was to downblend a portion of the surplus HEU as commercial fuel at the NFS site, and to downblend the rest of it to waste at the Savannah River Site. The environmental impacts of this option are discussed at length in the DOE EIS (Ref. 10). *This EA serves to evaluate the site-specific impacts, which were not evaluated at length in the DOE EIS.* The DOE EIS as used to prepare this document, and is referenced when the analyses were appropriate. Where it is not referenced, the NRC performed an independent analysis.

*Id.* at 1-2 (emphasis added). Thus, the Staff conceded that the DOE’s Programmatic EIS cannot be relied on to provide complete support for its NEPA decision at the permitting stage. *See also State of California v. Block*, 690 F.2d 753, 761 (9<sup>th</sup> Cir. 1982) (when a programmatic EIS has already been prepared, “we have held that site-specific impacts need not be fully evaluated until a ‘critical decision’ has been made to act on site development.”) Moreover, it is notable that the 2002 EA makes no references to the

DOE's Programmatic EIS in Chapter 5, which contains the NRC Staff's analysis of accident impacts

**3. Information in Programmatic EIS Suggests that Impacts to Workers are Significant.**

In any event, the generic "bounding accident" probability estimates reported in the 1996 Programmatic EIS suggest that the impacts of accidents at the NFS-Erwin facility are significant and should be examined in a site-specific EIS. In Table 4.3.3.6-4, for example, the DOE estimates the probability per year of a filter fire as  $10^{-3}$  per event per year, and estimates the probability of both an earthquake-induced criticality and an evaluation basis earthquake scenario at  $10^{-4}$  per event per year. *Id.* at 4-71. The table estimates doses of 200 rem to "noninvolved workers" (*i.e.*, workers not directly involved in processing activities) for the evaluation basis earthquake scenario. 200 rem is twice the worker dose that is considered to cause a "high consequence" event in 10 C.F.R. § 70.61(b)(1). In the text accompanying the table, the EIS also states that the combined evaluation-basis earthquake and earthquake-induced criticality "would probably result in fatal doses to the involved workers." *Id.* Therefore, if anything, the 1996 Programmatic EIS established the need for NRC to have conducted a more thorough site-specific EIS when NFS began to downblend HEU in 1993.



But no EIS was ever prepared for HEU downblending at the NFS-Erwin site.<sup>10</sup> When NFS first received NRC permission to downblend HEU at the Erwin plant in 1993, the NRC did not even prepare an EA; instead, it prepared only a FONSI. NFS Presentation at 16 n.15. In 1999, when NFS' license was reviewed, the Staff prepared only an EA and a FONSI. Now the Staff is proposing to allow NFS to expand its HEU downblending operation again, without preparing an EIS to address the environmental impacts of the BLEU Project. Thus, the Staff is allowing NFS to conduct an operation whose dangers were pointed out in a generic EIS, without ever conducting the detailed and site-specific environmental studies that NEPA requires.

**4. 1999 EA is deficient to support BLEU Project FONSI.**

NFS also asserts that the NRC Staff can rely on the 1999 EA for its decision not to prepare an EIS for the proposed BLEU Project. NFS Presentation at 14. The 1999 EA has significant deficiencies which preclude such reliance, however. First, as discussed above in section II.C.1, the EA necessarily fails to take into account the information provided by NFS in the ISA Summaries. In addition, the EA fails to address the environmental impacts of accidents at the NFS-Erwin operation on workers. Moreover, as discussed above, the 1999 EA is not backed up by any detailed and site-specific environmental study.

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<sup>10</sup> In fact, it is not clear whether an EIS was ever prepared for the NFS-Erwin plant. The lists of reference documents provided in the 2002 EA and the 1999 EA do not contain any mention of an EIS. The 1991 EA refers to an "Environmental Impact Appraisal" dated January 1978, but this document is not in the NRC's Public Document Room. See 1991 EA at 1-1 and 1-4. At any rate, an EIS prepared in 1978 for a process that has been significantly modified to include downblending of HEU would be of little technical value today.

### III. CONCLUSION

In refusing to prepare an EIS for the BLEU Project, the Staff completely failed to address the significance of new quantitative information, submitted by NFS, which shows that the probability of serious accidents with significant health impacts to workers and offsite members of the public is reasonably foreseeable. Accordingly, the Staff's finding of no significant impact must be rejected. The Staff should be ordered to prepare an EIS that fully addresses the environmental impacts of the BLEU Project, as well as the costs and benefits of a reasonable array of alternative measures for avoiding or mitigating those impacts, such as modifications to the processes or procedures or emergency planning measures.

Respectfully submitted,



Diane Curran  
Harmon, Curran, Spielberg & Eisenberg, LLP  
1726 M Street N.W., Suite 600  
Washington, DC 20036  
202/328-3500  
FAX: 202/328-6918  
e-mail: [dcurran@harmoncurran.com](mailto:dcurran@harmoncurran.com)

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