

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

LBP-05-08

**RAS 9628**

**DOCKETED 03/28/05**

ATOMIC SAFETY AND LICENSING BOARD PANEL

**SERVED 03/28/05**

Before Administrative Judges:

Alan S. Rosenthal, Presiding Officer  
Dr. Richard F. Cole, Special Assistant

In the Matter of

NUCLEAR FUEL SERVICES, INC.

(Erwin, Tennessee)

Docket Nos. 70-143-MLA, 70-143-MLA-2,  
70-143-MLA-3

ASLBP Nos. 02-803-04-MLA, 03-810-02-MLA,  
04-820-05-MLA

March 28, 2005

**INITIAL DECISION**  
**(Upholding Issuance of License Amendments)**

This proceeding involves three license amendment requests submitted to the Nuclear Regulatory Commission by Nuclear Fuel Services, Inc. (Licensee) in support of its proposed Blended Low Enriched Uranium (BLEU) Project. The project is part of a Department of Energy (DOE) initiative to reduce existing supplies of surplus highly enriched uranium (HEU) through re-use or disposal. The Licensee has contracted with Framatome ANP, Inc. to downblend surplus HEU into a low enriched uranium (LEU) dioxide product that is expected to be converted to commercial reactor fuel for use in a Tennessee Valley Authority nuclear power reactor. The license amendments at issue in this proceeding authorize the Licensee to produce the LEU dioxide product.

In response to a Federal Register notice of opportunity for hearing published in October 2002 (67 Fed. Reg. 66,172), Intervenor, State of Franklin Group of the Sierra Club, together with

three other groups<sup>1</sup> [hereinafter collectively Sierra], filed timely hearing requests with regard to each of the three license amendment applications. In LBP-04-05, 59 NRC 186 (2004), the requests were granted. At the same time, hearing requests filed by another organization and numerous individuals were denied for lack of the requisite standing.<sup>2</sup>

In the wake of the grant, and in accordance with an established schedule for resolving the merits of the matters in issue, Sierra Club filed its written presentation on October 14, 2004; the Licensee and the NRC Staff filed their responsive written presentations on December 22, 2004; and Sierra Club filed its reply presentation on February 11, 2005, to which the Licensee responded on February 23, 2005. It appearing to Judge Cole and this presiding officer that the several presentations were **sufficient** to enable an informed consideration and disposition of the issues raised by Sierra, **no supplemental oral presentations** were solicited.

For the reasons set forth hereinafter, we uphold the NRC Staff's issuance of the license amendments in question.<sup>3</sup>

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<sup>1</sup> Friends of the Nolichucky River Valley; Oak Ridge Environmental Peace Alliance; and Tennessee Environmental Council.

<sup>2</sup> The hearing requests were submitted and acted upon in the context of the then provisions of Subpart L, the portion of the Commission's Rules of Practice applicable to the adjudication of materials license proceedings. 10 C.F.R. § 2.1201 et seq. Thereafter, effective February 13, 2004, the Rules of Practice codified in 10 C.F.R. Part 2 underwent a substantial revision. See 69 Fed. Reg. 2,182 (Jan. 14, 2004). The Commission not having directed otherwise, however, this proceeding remains subject to the provisions of the now-superseded Subpart L, and any references to the Rules of Practice in this decision will be to those provisions.

<sup>3</sup> Neither the filing nor the grant of the Sierra hearing request precluded the issuance of the sought license amendments. See 10 C.F.R. § 2.1205(m). Sierra's motion for a stay of such issuance was denied. **LBP-04-02, 59 NRC 77 (2004).**

While the ultimate decisional responsibility in Subpart L proceedings may lie with the presiding officer, the applicable Rules of Practice also contemplate that a member of the Licensing Board Panel with technical expertise will participate actively in the adjudication of any proceeding to which assigned as Special Assistant. See 10 C.F.R. § 2.722. In this instance, Judge Cole played an important role in the assessment of the record pertaining to the presented issues, particularly the issue of interpretation of the Licensee's use of certain data in its Integrated Safety Analysis. The determinations reached in this decision have his

## I. BACKGROUND

The Licensee is the holder of Special Nuclear Material (SNM) License No. SNM-124, which authorizes it to process HEU into a classified fuel product; to process scrap materials containing HEU to recover uranium; and to perform various decommissioning activities at its Erwin, Tennessee site. The BLEU Project, the subject of the license amendment requests at issue here, requires the use of four buildings at the Licensee's Erwin, Tennessee site, collectively referred to as the BLEU Complex. They are the BLEU Preparation Facility (BPF), to be located in an existing structure, and three newly constructed buildings: the Uranyl Nitrate Building (UNB), the Oxide Conversion Building (OCB), and the Effluent Processing Building (EPB). Downblending of the HEU will occur at the BPF, located in an existing but inactive area at the site. The UNB will be employed to store low-enriched uranyl nitrate (UN) solution produced at the BPF. The OCB will then process the low-enriched UN solution into a  $UO_2$  powder using the ammonium diuranate (ADU) process. The liquid sodium nitrate waste stream from the OCB is to be received and treated at the EPB.

The Licensee submitted its license amendment application in three parts: the first for the UNB, the second for the BPF, and the third for the OCB and EPB. Sierra responded to the license amendments in three separate hearing requests, which were later consolidated for adjudicatory consideration.

Although in its hearing requests Sierra identified a number of areas of concern,<sup>4</sup> in its initial written presentation it focused on just one of them: the NRC Staff's conclusion in an environmental assessment (EA) that there was no necessity to prepare a full environmental impact statement (EIS), a conclusion reflected in the issuance of a finding of no significant

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endorsement.

<sup>4</sup> See LBP-04-05 supra, 59 NRC at 198-99.

[environmental] impact.<sup>5</sup> On that score, Sierra insisted that the evidentiary record, in particular NFS' license amendment application and the NRC Staff's review documents, showed that "the potential for a range of serious accidents at the proposed BLEU Project falls squarely within the probability range considered by the NRC to be reasonably foreseeable and, therefore, to require preparation of an EIS."<sup>6</sup> Sierra further asserted that the BLEU Project met the NRC's qualitative criteria requiring preparation of an EIS.<sup>7</sup>

On December 22, 2004, the Licensee and the NRC Staff filed their responses to Sierra Club's written presentation. The Staff asserted that, for the reasons assigned in its submission, it complied fully with NEPA in performing an environmental assessment of the project as a whole and supplemental environmental reviews for each of the three associated license amendments.<sup>8</sup>

For its part, the Licensee similarly maintained that the Staff fully met its statutory and regulatory requirements under NEPA.<sup>9</sup> Further, it insisted that Sierra's challenge to the NRC Staff's NEPA review was fundamentally flawed because it relied on a misapplication of information from the BLEU Project Integrated Safety Analyses (ISAs) that the Licensee had supplied to the Staff.<sup>10</sup> According to the Licensee, because of this misapplication, Sierra

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<sup>5</sup> See generally 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) [hereinafter Sierra Presentation].

<sup>6</sup> See id. at 23.

<sup>7</sup> Ibid.

<sup>8</sup> See NRC Staff Response to the Legal and Evidentiary Presentation of the Sierra Club et al (Dec. 22, 2004) at 20 [hereinafter Staff Response].

<sup>9</sup> See Applicant's Written Presentation in Response to Intervenors' Written Legal and Evidentiary Presentation (Dec. 22, 2004) at 14 [hereinafter Licensee Response].

<sup>10</sup> See id. at 33.

overestimated the probability of BLEU project accidents, and exaggerated the potential consequences from these accidents, thus overstating the overall risk associated with the project.<sup>11</sup>

In its reply presentation, Sierra focused exclusively on its claim that preparation of an EIS was required. Sierra did not present any affirmative evidence of its own to support that proposition; rather, it relied entirely on its interpretation of information in the ISA Summaries that had been provided by the Licensee. Specifically, Sierra claims that the NRC Staff failed to take into account quantitative probability estimates provided in the Summaries that, according to Sierra, show that the potential adverse environmental impacts of the proposed BLEU Project are of the severity requiring preparation of an EIS.

## II. ANALYSIS

A. As noted above, Sierra's challenge to the authorization of the BLEU project is based entirely on the proposition that the NRC Staff failed to comply with the requirements of the National Environmental Policy Act of 1969, as amended, 42 U.S.C. §§ 4321, 4331-35 (NEPA). Specifically, Sierra asserts that the NRC Staff failed to consider information that shows that the potential impacts of the BLEU Project are of such severity that the preparation of an EIS is required. In response, the NRC Staff (supported by the Licensee) maintains that, in approving the license amendments, it complied fully with the requirements of NEPA and Commission regulations implementing NEPA.

Before evaluating these competing assertions, it is necessary to examine the relevant provisions of NEPA and the NRC regulations implementing that statute.

Section 102(2)(C) of NEPA provides:

The Congress authorizes and directs that, to the fullest extent possible . . . (2) all agencies of the Federal Government shall – . .

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<sup>11</sup> See ibid.

..  
(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.<sup>12</sup>

As the Supreme Court has observed, NEPA thus imposes a procedural requirement on an agency's decision-making process by mandating that an agency consider the environmental impacts of a proposed action and inform the public that it has taken those impacts into account in making its decision.<sup>13</sup> In other words, an agency must take a "hard look" at the environmental consequences of a proposed action before taking that action.<sup>14</sup>

Commission regulations implementing NEPA are found in 10 C.F.R. Part 51.<sup>15</sup> That Part provides guidelines for the Staff to determine whether an environmental assessment will suffice or whether, instead, an environmental impact statement is required. In that regard, Section 51.20 specifies that an EIS must be prepared where "[t]he proposed action is a major federal action significantly affecting the quality of the human environment" or where the Commission, in its discretion, determines that an EIS is required.

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<sup>12</sup> 42 U.S.C. § 4332(2)(C).

<sup>13</sup> See *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 558 (1978); *Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97 (1983).

<sup>14</sup> *Balt. Gas.*, 462 U.S. at 97.

<sup>15</sup> See 10 C.F.R. § 51.10(a).

Section 51.20(b) sets forth those actions that the Commission has determined require the preparation of an EIS. As to all other licensing and regulatory actions necessitating an environmental review,<sup>16</sup> the Staff first prepares an environmental assessment for the purpose of determining whether the action is, in fact, a “major Federal action significantly affecting the quality of the human environment” requiring preparation of an EIS. The 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.<sup>17</sup>

Based on the findings contained in the EA, the Staff either moves forward to prepare an EIS or issues a finding of no significant [environmental] impact (FONSI). Where the Staff determines that a FONSI is appropriate, its finding to that effect 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 assessment 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
- (6) State that the finding and any related environmental documents are available for public inspection and where the documents may be inspected.<sup>18</sup>

In conducting its review, the NRC Staff is governed by a “rule of reason” whereby only

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<sup>16</sup> There are certain such actions that do not require any such review. 10 C.F.R. §§ 51.21, 51.22(a) - (d). They are of no moment here.

<sup>17</sup> 10 C.F.R. § 51.30(a).

<sup>18</sup> 10 C.F.R. § 51.32(a).

“reasonably foreseeable” impacts need be addressed.<sup>19</sup> In other words, the Staff is excused from conducting a NEPA analysis of “remote and speculative” impacts or “worst case” scenarios.<sup>20</sup>

B. Against this background, we turn to the basis of Sierra’s insistence that the NRC Staff failed to fulfill its statutory and regulatory responsibilities in conducting its review of the BLEU Project license amendment applications. **In its first written presentation, Sierra asserts that the evidentiary record, primarily NFS’ license amendment application and the NRC Staff’s environmental and safety review documents, “demonstrates unequivocally that the impacts of the proposed BLEU Project meet both the NRC’s quantitative and qualitative criteria for preparation of an EIS.”<sup>21</sup> In its reply presentation, Sierra emphasizes that the NRC Staff failed to take into account the quantitative probability estimates used by the Licensee in its ISA Summaries, which Sierra maintains show that the potential adverse environmental impacts of the proposed BLEU Project are of the severity requiring preparation of an EIS.**

On that score, Sierra claims that, **by failing to consider these estimates, the Staff failed to take the “hard look” required by NEPA. In its view, “[t]he pivotal question in this case is whether, in refusing to prepare an EIS for the proposed BLEU Project, the NRC Staff gave [the quantitative probability estimates in NFS’ ISA Summaries] reasoned consideration.”<sup>22</sup> Sierra thus hinges its entire argument on two propositions: (1) in meeting its NEPA burden, the NRC**

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<sup>19</sup> See Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-55, 56 NRC 340, 348-49 (2002).

<sup>20</sup> Ibid.

<sup>21</sup> Sierra Presentation at 23.

<sup>22</sup> 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 (Feb. 11, 2005) at 5 [hereinafter Sierra Reply].



Staff was required to consider the quantitative probability estimates in the ISA Summaries prepared by the Licensee; and (2) the Staff failed to consider this information and thus did not meet its burden.

According to the Staff, as part of its environmental review of the proposed BLEU Project, it reviewed the ISA Summaries prepared by NFS pursuant to 10 C.F.R. Part 70. Although noting that review of the ISAs is not a required part of its environmental review, the Staff stated that it nonetheless had “reviewed the ISA summaries submitted by NFS to confirm that [it] considered all potential accidents during its environmental review.”<sup>23</sup> That examination had revealed that “there were no potential accidents that the Staff had not already considered,” and thus “confirmed the validity of its findings that there would be no significant impacts from accidents due to the BLEU amendments.”<sup>24</sup>

For its part, the Licensee maintains that the NRC Staff met its burden under NEPA. Additionally, the Licensee insists that Sierra misinterpreted the facts and misapplied the data provided in the ISA Summaries, and that, contrary to the Sierra claim, these data do not represent the probabilities of occurrence for accident sequences at the facility.

We now turn to consider the substance of the Sierra claim and the responses thereto.

1. 10 C.F.R. § 70.62 requires each licensee or applicant to prepare an ISA. By reason of Section 70.65, a summary of the fruits of the ISA must be included in the application for a license, license renewal or license amendment.<sup>25</sup>

The preparation of an ISA and associated summary involves identifying potential

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<sup>23</sup> Staff Response at 28-29 (citing Aff. ¶ 17).

<sup>24</sup> Ibid.

<sup>25</sup> “Integrated Safety Analysis” is defined by 10 C.F.R. § 70.4 as “a systematic analysis to identify facility and external hazards and their potential for initiating accident sequences, the potential accident sequences, their likelihood and consequences, and the items relied on for safety.”

accidents and accident sequences that would result in unacceptable consequences and assessing the expected likelihood of those consequences.<sup>26</sup> In the ISA, the applicant (here, Licensee) also identifies and describes the controls or safety systems necessary to prevent those accidents or to mitigate their consequences, and identifies and describes measures taken to ensure that the items relied on for safety (IROFS) are reliable and available to perform their functions when needed.<sup>27</sup> Section 70.61 describes performance requirements for two categories of accident sequence consequences: “high consequence” and “intermediate consequence.”<sup>28</sup>

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<sup>26</sup> All credible events (accident sequences) involving process deviations or other events internal to the facility (e.g., explosions, spills, and fires), and credible external events that could result in facility-induced consequences to workers, the public, or the environment, that could exceed the performance requirements of 10 C.F.R. § 70.61 are examined. At a minimum, external events normally include: (1) natural phenomena events such as floods, high winds, tornadoes, and earthquakes; (2) fires external to the facility; and (3) transportation accidents and accidents at nearby industrial facilities. See Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility, Final Report (Mar. 2002), NUREG-1520, at 3-2 [hereinafter NUREG-1520].

<sup>27</sup> See Licensee Response at 34-36.

<sup>28</sup> These two categories suggest that a third category of “less than intermediate” might also be included, but 10 C.F.R. § 70.61 is silent in that respect. NUREG-1520 does include, however, in its discussion of ISAs, a “less than intermediate” category, and identifies it as “Low Consequence.” The “Low Consequence” category is found in Table A-1:

**Table A-1: Consequence Severity Categories Based on 10 CFR 70.61**

Category	Workers	Offsite Public	Environment
High Consequence	*RD > 1 Sievert (Sv) (100 rem) **CD = endanger life	RD > 0.25 Sv (25 rem) 30 mg sol U intake CD = long-lasting health effects	
Intermediate Consequence	0.25 Sv (25 rem) < RD ≤ 1Sv (100 rem) CD = long-lasting health effects	0.05 Sv (5 rem) < RD ≤ 0.25 Sv (25 rem) CD = mild transient health effects	Radioactive release > 5000 x Table 2 of 10 CFR Part 20, Appendix B
Low Consequence	Accidents of lower radiological and chemical exposures than those above in this column	Accidents of lower radiological and chemical exposures than those above in this column	Radioactive releases producing lower effects than those referenced above in this column

\* RD = Radiological Dose

\*\*CD = Chemical Dose

NUREG-1520 at 3-A-2.

For each accident sequence analyzed in the ISA, the applicant assigns an “Initiating Event Frequency Index” to the initiating and enabling events.<sup>29</sup> It then assigns “Effectiveness of Protection Index” values to each IROFS that is employed to prevent the accident or mitigate its consequences.<sup>30</sup> The Initiating Event Frequency values are used to arrive at an “Uncontrolled Likelihood Index T” value. This represents a qualitative index of the likelihood of an unmitigated, uncontrolled accident consequence (i.e., no credit is given for any of the IROFS that would be involved in an actual accident sequence). The second summation adds both the Initiating Event Frequency Index values and the Effectiveness of Protection Index values to arrive at the “Controlled Likelihood Index T” value. The difference between the Controlled and Uncontrolled Likelihood Index T values shows the increased level of safety provided by the IROFS in the controlled sequence.<sup>31</sup>

Sierra asserts that the Controlled Likelihood Index T values (e.g., -3, -4, -5, etc.) that are contained in the ISA Summaries upon which it relies represent exact quantitative accident probabilities corresponding to accident frequencies of  $10^{-3}$ ,  $10^{-4}$ ,  $10^{-5}$ , etc., per accident per year.<sup>32</sup> Sierra would have it that accidents with such high probabilities and consequences are of sufficient severity that preparation of an EIS is required, and further, that the NRC Staff failed to consider these estimates in its environmental review. According to Sierra, “there is no evidence

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<sup>29</sup> An example of an initiating event might be a valve failure allowing uncontrolled addition of HEU to a tank. An enabling event is a subsequent event that must take place for the accident sequence to proceed to a point where adverse consequences might occur.

<sup>30</sup> See Licensee Response, Declaration of Robert L. Frost Regarding NFS Response to Criticality Accident Sequences Cited by Intervenors in Their Written Presentation (Dec. 14, 2004) at 6-7 [hereinafter Frost Decl.]; Licensee Response, Declaration of Jennifer K. Wheeler and Carol L. Mason Regarding Chemical Accident and Risk Issues (Dec. 15, 2004) at 6-8 [hereinafter Wheeler/Mason Decl.].

<sup>31</sup> Licensee Response at 35.

<sup>32</sup> Sierra Reply at 10-16.

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."<sup>33</sup> It further states that "the NRC was required to consider this . . . quantitative information in determining whether to prepare an EIS for the proposed BLEU Project."<sup>34</sup>

2. Thus, the sole question before us is whether there is substance to Sierra's reliance on information contained in the ISA Summaries – and that alone – as mandating the preparation of an EIS. As earlier observed, the Licensee submitted its license amendment application in three parts: the first for the UNB, the second for the BPF, and the third for the OCB and EPB. Rather than segregate the environmental reviews for each part of the BLEU Complex, the Staff decided to perform a single NEPA review that considered the environmental impacts of the entire project. To aid in this review, on November 9, 2001, the Licensee submitted a Supplement to Applicant's Environmental Report (SAER), which covered potential impacts of all three license amendments. The SAER was supplemented on January 15, 2002, March 15, 2002, and April 12, 2002.

Issued by the Staff on June 30, 2002, the first EA (June 2002 EA) contained the Staff's assessment of the potential environmental impacts of all three license amendments. Because at that time only one of the license amendment applications had been submitted, the Staff expressed its intent to perform an additional review for each successive license amendment application, to determine whether the June 2002 EA sufficiently considered the environmental impacts of the proposed action. The Staff did, in fact, perform two additional reviews, determining in each that the June 2002 EA adequately assessed the environmental impacts of the entire BLEU Project. A finding of no significant impact (FONSI) was issued for the first license amendment on July 9, 2002, and an EA and FONSI were issued for the second and third

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<sup>33</sup> Id. at 7.

<sup>34</sup> Id. at 20.

license amendments on September 17, 2003, and June 14, 2004, respectively.

In performing its environmental review and assessing the environmental impacts of the license amendments, the Staff examined new impacts expected from both normal operations and potential accidents. According to the Staff's affiants, the Staff did not extensively re-analyze operations that were evaluated in previous EAs prepared for the existing NFS facility; rather, previously evaluated operations "provided a baseline for the Staff's environmental evaluation of the amendments."<sup>35</sup> The Staff also considered the cumulative impact of new impacts added to existing impacts, and determined that there were, in fact, some additional environmental impacts from normal operations. These impacts, however, were determined in the June 2002 EA to be not significant. The Staff ultimately concluded that the BLEU Project did not result in the potential for new accidents or more significant environmental impacts beyond those already possible from existing operations. Further, it determined that minimal new environmental impacts from normal operations added to existing environmental impacts did not result in significant cumulative impacts.<sup>36</sup>

In the course of the review, the Staff considered three categories of accidents: (1) criticality; (2) radiological; and (3) chemical. For each type of accident, it evaluated the accidents with the most potentially significant consequences to determine whether they were bounded by previous environmental assessments.<sup>37</sup>

A criticality accident, according to the Staff, is the most potentially serious credible accident that might occur at the BLEU Project. The possibility of such an accident was previously evaluated in both the 1991 and 1999 license renewal EAs prepared in connection with

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<sup>35</sup> Staff Response, Affidavit of Mary T. Adams, Michael A. Lamastra, and Donald E. Stout (Dec. 22, 2004) ¶ 7 [hereinafter Adams Aff.].

<sup>36</sup> Ibid.

<sup>37</sup> Id. ¶ 8.

the activities in which the Licensee was then engaged. The only potential difference recognized by the Staff between a criticality accident at the BLEU Project and one occurring during the previously conducted license activities is the location of the material being processed. However, although an accident at one of the new buildings could take place slightly closer to the site boundary than an accident occurring at the present facility, the Staff concluded that this difference would have only a minimal impact on any off-site dose, and thus that the license amendments at issue would not result in the potential for a new, or more serious, criticality accident.<sup>38</sup>

The Staff also considered that a radiological release could be initiated by an event other than a criticality accident, such as a fire or explosion. It noted, however, that “[b]ecause the dispersion mechanism is the same for any radiological release, whether initiated by criticality or another event, and criticality has by far the largest potential source term for a radiological accident, criticality is bounding for all potential radiological releases at the BLEU Project.”<sup>39</sup>

The third and final type of potential accident considered by the Staff was a chemical accident. The Staff concluded that the most potentially serious chemical accidents would be a release of 67 weight percent nitric acid, a liquid release of uranyl nitrate (UN), and a liquid release of aqueous ammonia. Regarding a release of nitric acid, the Staff concluded that “[a] 67 weight percent nitric acid release at the BLEU Project is bounded by the nitric acid release at the existing NFS facility that was evaluated in the 1991 EA.”<sup>40</sup>

Although a UN release, according to the Staff, would not be a new accident at the Erwin site, the Staff considered that the UN storage tanks for the BLEU Project are larger than those

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<sup>38</sup> Id. ¶ 9.

<sup>39</sup> Id. ¶ 10.

<sup>40</sup> Id. ¶ 12.

used in operations at the existing facility. For the most severe accident considered credible – a failure of two large UN storage tanks – the Staff concluded that three-fourths of the total volume would be contained in the building dike and the remainder would be released to the environment. Although the liquid plume would be contained by the site drainage system and would thus not reach any surface water, an airborne plume would also be released. The chemical of concern in a UN release, the Staff concluded, is nitric acid, but the nitric acid concentration in UN is less than 67 weight percent, and thus “the consequences of a UN release are bounded by the Staff’s evaluation of a 67 weight percent nitric acid release.”<sup>41</sup>

An ammonia release accident was evaluated in the 1991 EA, and the Staff concluded that the 1991 analysis bounds any potential release at the BLEU Project. The Staff noted that “while the concentrations [of ammonia] 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 ammonia release at the NFS facility.”<sup>42</sup>

Thus, for the three types of accidents evaluated by the Staff in its environmental review, the Staff determined that the impacts from accidents possible as a result of the BLEU Project were bounded by impacts evaluated in previous environmental reviews and determined to be insignificant. Once again, in its rebuttal presentation, there was no attempt on the part of Sierra to counter substantively the sufficiency of the Staff’s analysis or conclusions.

3. In its response, the Licensee asserts that Sierra has misinterpreted the facts and misapplied the data provided in the ISA Summaries, and that those data do not serve to estimate the probabilities of occurrence for accident sequences at the facility, as Sierra would have it. Although bearing some resemblance to quantitative probabilities, the Licensee insists

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<sup>41</sup> Id. ¶ 13.

<sup>42</sup> Id. ¶ 14.

that the data are simply indexes providing “qualitative envelopes or bounding maxima” that demonstrate that the potential accident sequence likelihoods have been reduced to or below the NRC safety regulations.<sup>43</sup>

The Licensee’s affiants assert that Sierra has not considered that (1) the likelihood indices provide conservative estimates; and (2) the analysis stops once the ISAs demonstrate that the accident sequences are “highly unlikely” (in the case of accidents with “high” consequences) or “unlikely” (in the case of accidents with “intermediate” consequences) – thus meeting the requirements of 10 C.F.R. § 70.61.<sup>44</sup> Accordingly, there is no assessment of the actual probabilities of each sequence. Further, the affiants address each of the accident scenarios or sequences that Sierra referenced in its presentation and set forth the basis for their belief that the results are conservative and in complete compliance with Section 70.61.<sup>45</sup>

In evaluating the Licensee’s position in this regard, it must be kept in mind that 10 C.F.R. § 70.61 does not quantify the terms “highly unlikely” or “unlikely.” Section 70.61(b) states merely that:

The risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section.<sup>46</sup>

For its part, 10 C.F.R. § 70.65(b)(9) requires that the applicant provide “[a] description of the definitions of unlikely, highly unlikely, and credible as used in the evaluations in the

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<sup>43</sup> Licensee Response at 37.

<sup>44</sup> Frost Decl. at 1.

<sup>45</sup> Wheeler/Mason Decl. at 19, 20; Frost Decl. at 30-31.

<sup>46</sup> Section 70.61(c) discusses the risk associated with intermediate consequence events. See Table A-1 in note 28, supra, for the radiological and chemical dose limits listed in 10 C.F.R. §§ 70.61(b) and (c).



integrated safety analysis.” It thus appears that the applicant has the task of proposing what an acceptable risk is. The Staff, however, provided guidance to applicants in its March 2002 Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility, NUREG-1520 (NUREG-1520).<sup>47</sup> Regarding quantitative acceptance criteria for “unlikely” and “highly unlikely” as applied to individual accident sequences identified in the ISA, NUREG-1520 states that a likelihood of less than  $10^{-4}$  per event per year is acceptable for “unlikely,” and a likelihood of less than  $10^{-5}$  per event per year is acceptable for “highly unlikely,” for purposes of showing compliance with 10 C.F.R. § 70.61.<sup>48</sup> The stated guidelines are used to define the largest likelihood values that would be acceptable limits. Definitions based on lower limits are also acceptable.<sup>49</sup>

The Licensee’s definitions of “highly unlikely,” “unlikely,” and “credible,” developed in accordance with Section 70.65(b)(9), are set forth in the presentation of its affiants, Wheeler and Mason.<sup>50</sup> Those definitions and the acceptance criteria used by the Licensee appear to be consistent with the Staff guidance provided in NUREG-1520. In this connection, Sierra did not suggest that these definitions and criteria are inappropriate or inadequate.

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Based on the foregoing, Judge Cole and this presiding officer are compelled to conclude that Sierra has provided no reason that might justify a withholding of the license amendments sought for the BLEU project. In the final analysis, the matter comes down to this.

As noted, in the three hearing requests addressed to the project, Sierra advanced

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<sup>47</sup> See NUREG-1520 at 3-21 through 3-28.

<sup>48</sup> Id. at 3-28.

<sup>49</sup> Ibid.

<sup>50</sup> See Wheeler/Mason Decl. at 9-10.

several areas of concern that were found in LBP-04-05 to be viable. In its written presentations, however, Sierra elected to confine its challenge to the NRC Staff's conclusion, following its environmental review, that a full environmental impact statement need not be prepared, a conclusion that prompted the issuance of the finding of no significant environmental impact associated with the carrying out of the project.

We have also seen that, in insisting that the significant possibility of an accident with serious environmental consequences required the preparation of an EIS, Sierra did not offer one scintilla of affirmative evidence tending to buttress that claim. Nor did it include in its rebuttal presentation any expert opinion to counter the affidavits supplied by the Staff and Licensee in response to that claim.

A like situation obtained in FMRI., INC. [formerly FANSTEEL, INC.], (Muskogee, Oklahoma Facility), LBP-04-08, 59 NRC 266 (2004). In that case, the State of Oklahoma challenged on a variety of grounds a site decommissioning plan presented by the Licensee for the Staff's approval. The State offered, however, no expert opinion either to support the challenge or (in its rebuttal written presentation) to counter the expert evidence supplied by way of affidavits in the Staff and Licensee responsive presentations. With regard to this state of affairs, the presiding officer observed:

To be sure, that absence cannot be taken as fatal per se to Oklahoma's cause. It was open to the State 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. Needless to say, however, that is a difficult undertaking that is not invariably successful.<sup>51</sup>

The endeavor was there found short of the mark with the consequence that the Oklahoma challenge to the decommissioning plan was rejected in LBP-04-08. Here, Sierra

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<sup>51</sup> 59 NRC at 271.

fares no better in relying virtually exclusively upon its interpretation of certain quantitative accident probability estimates found in the ISA Summaries that had been supplied to the Staff by the Licensee.

We need not pause to decide whether, and if so to what extent, the Staff is obliged by either statute or regulation to consider the content of ISAs in the course of taking the requisite “hard look” at the environmental consequences of the proposed BLEU Project. For one thing, we have been given no reason to question the Staff’s representation that it reviewed the ISA Summaries to confirm that its environmental review had considered all potential accidents. More importantly, we are satisfied that the approach that the Staff took in addressing the accident probability issue (as outlined above) met the NEPA standard.

In addition, there is the matter of the Licensee’s insistence that Sierra has misinterpreted the ISA Summaries, with the result that they did not lend support to the claim of a sufficient probability of a serious accident as to necessitate the preparation of an EIS. On its face, the Licensee’s explanation of the basis for this insistence seems wholly plausible. In any event, in its rebuttal presentation, Sierra made no attempt to demonstrate that the explanation was flawed. That being so, Sierra is hardly in a position to complain of our unwillingness to attach the significance to the Summaries that would be required in order to sustain its claim of a NEPA violation on the part of the Staff.

The short of the matter is that, particularly when considered in the light of the substantive showings of the Licensee and Staff, what Sierra has chosen to put before us does not come close to what was necessary to give credence to the single Sierra concern that has been addressed in its written presentations. There is simply no basis in the record at hand for a determination on our part that the Staff’s environmental review failed adequately to consider the possibility of the occurrence of an accident with serious environmental consequences. That being so, we have been given no reason to overturn either the Staff’s conclusion that an EIS

was not required or the FONSI that accompanied it.

Accordingly, the issuance of the requested license amendments authorizing the Blended Low Enriched Uranium (BLEU) Project must be, and hereby is, upheld, and these proceedings are terminated.

As authorized by 10 C.F.R. § 2.1253, if so inclined Sierra may petition the Commission for review of this decision in accordance with the procedures set forth in now-superseded Sections 2.786 and 2.763 of the Rules of Practice (see n.2, supra). Pursuant to Section 2.786(b)(1), the petition for review must be filed within fifteen (15) days of the service of this decision and must meet the requirements set forth elsewhere in Subsection (b)(2). Within ten (10) days after service of the petition, other parties to the proceeding may file answers either supporting or opposing its grant. **10 C.F.R. § 2.786(b)(3)**. For its part, Section 2.763 authorizes a party to request the Commission to allow oral argument with regard to the petition.

It is so ORDERED.

BY THE PRESIDING OFFICER<sup>52</sup>

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Alan S. Rosenthal  
ADMINISTRATIVE JUDGE

Rockville, MD  
March 28, 2005

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<sup>52</sup> Copies of this initial decision were sent this date by Internet electronic mail transmission to the counsel for Sierra, the Licensee, and the NRC Staff.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB INITIAL DECISION (UPHOLDING ISSUANCE OF LICENSE AMENDMENTS) (LBP-05-08) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

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LB INITIAL DECISION (UPHOLDING ISSUANCE OF  
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[Original signed by Evangeline S. Ngbea]

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Office of the Secretary of the Commission

Dated at Rockville, Maryland,  
this 28<sup>th</sup> day of March 2005