

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-11-11

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

G. Paul Bollwerk, III, Chairman
Dr. Kaye D. Lathrop
Dr. Craig M. White

In the Matter of

AREVA ENRICHMENT SERVICES, LLC

(Eagle Rock Enrichment Facility)

Docket No. 70-7015-ML

ASLBP No. 10-899-02-ML-BD01

April 8, 2011

FIRST PARTIAL INITIAL DECISION
(Uncontested/Mandatory Hearing on Safety Matters)

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ACRONYMS AND ABBREVIATIONS

ACP	American Centrifuge Plant
AEA	Atomic Energy Act of 1954
AES or AES LLC	AREVA Enrichment Services, LLC
ALARA	as low as reasonably achievable
AVZ	axial volcanic zone
B.A.	Bachelor of Arts
B.S. or B.Sc.	Bachelor of Science
CCI	Center for Construction Inspection
CEO	chief executive officer
CIP	construction inspection program
CMP	classified matter plan
CV	Curriculum Vitae
DU	depleted uranium
ER	environmental report
EREF	Eagle Rock Enrichment Facility
EIS	environmental impact statement
EP	emergency plan
ESRP	Eastern Snake River Plain
ETC	Enrichment Technology Company
FCSS	Division of Fuel Cycle Safety and Safeguards
FFLD	Fuel Facility Licensing Directorate
FNMCP	fundamental nuclear material control plan
FOCI	foreign ownership, control, or influence
FOIA	Freedom of Information Act
GE	General Electric
GEH	GE-Hitachi
HAZOP	Hazard and Operability Analysis
I&C	instrumentation and controls
IMC	inspection manual chapter
INL	Idaho National Laboratory
IROFS	items relied upon for safety
ISA	integrated safety analysis
ISAS	integrated safety analysis summary
LES	Louisiana Energy Services
MC&A	material control and accounting
MOX	Mixed Oxide

M.P.P.	Master of Public Policy
M.S.	Master of Science
Mw	momentum magnitude
NCS	nuclear criticality safety
NEF	National Enrichment Facility
NEPA	National Environmental Policy Act
NMSS	Office of Nuclear Materials Safety and Safeguards
NRC	Nuclear Regulatory Commission
ORR	operational readiness review
OUO	Official Use Only
PID	partial initial decision
PSHA	probabilistic seismic hazard assessment
PSP	physical security plan
PVHA	probabilistic volcanic hazard analysis
QA	quality assurance
RAIs	requests for additional information
RD	restricted data
RES	Office of Nuclear Regulatory Research
SAR	safety analysis report
SBM	separations building modules
SER	safety evaluation report
SPPP	standard practice procedures plan
SPQ	Statement of Professional Qualifications
SRP	standard review plan
SUNSI	Sensitive Unclassified Non-Safeguards Information
SWU	separative work units
U	uranium
UF ₆	uranium hexafluoride
UPS	uninterruptible power supplies
USEC	United States Enrichment Corporation
YAEC	Yankee Atomic Electric Company

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I. INTRODUCTION

1.1 Pursuant to the Commission's July 23, 2009 hearing notice, see Notice of Receipt of Application for License; Notice of Consideration of Issuance of License; Notice of Hearing and Commission Order and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation; In the Matter of AREVA Enrichment Services, LLC (Eagle Rock Enrichment Facility), 74 Fed. Reg. 38,052 (July 30, 2009) (CLI-09-15, 70 NRC 1 (2009)), on January 25, 2011, this Licensing Board conducted an evidentiary hearing in Rockville, Maryland. That hearing was held in accordance with the requirements of the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011-2297, and 10 C.F.R. Part 70, which mandate that a hearing is required regarding the pending application of AREVA Enrichment Services, LLC, (AES or AES LLC) for a license to possess and use source, byproduct, and special nuclear material to enrich natural

uranium at a proposed facility, designated as the Eagle Rock Enrichment Facility (EREF), to be constructed and operated in Bonneville County, Idaho.

1.2 This partial initial decision (PID) provides the Board's findings and conclusions regarding the uncontested matters associated with this proceeding that arise under the provisions of the AEA, i.e., those matters relating to the public health and safety and the common defense and security (as opposed to environmental matters arising under the provisions of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4370). This includes the results of the Board's review of the relevant portions of the record of this proceeding, its inquiries of AES and the Nuclear Regulatory Commission (NRC) staff regarding several issues, and the information provided during the subject matter presentations at the January 2011 mandatory hearing evidentiary session. Accordingly, with the exception of the unresolved decommissioning funding financial assurance issue that is pending Commission consideration of a Board-certified question, see infra p. 9, in this decision we address the AEA/safety-related matters associated with the uncontested portion of this proceeding and determine that (1) the AES application, including its safety analysis report (SAR) and the associated integrated safety analysis summary (ISAS), emergency plan (EP), physical security plan (PSP), fundamental nuclear material control plan (FNMCP), and standard practice procedures plan (SPPP), along with the record of this proceeding, contain sufficient information to support license issuance; (2) the staff's review of the application, as embodied in its safety evaluation report (SER), has been adequate to support the findings to be made by the Director of the Office of Nuclear Materials Safety and Safeguards (NMSS), with respect to whether the AES application meets the applicable standards of Parts 30, 40, and 70; and (3) based on our conclusions regarding (a) the sufficiency of the AES application and record of the proceeding, and (b) the adequacy of the staff's review of the AES application, the issuance of a permit for

construction and operation of the EREF, as modified by the license condition regarding the educational and experience qualifications of the facility's nuclear criticality safety (NCS) manager set forth in section IV.B.1.b.iii below, will not be inimical to the common defense and security or the health and safety of the public.

II. PROCEDURAL BACKGROUND

2.1 On December 30, 2008, AES¹ filed an application, with a supporting SAR and environmental report (ER), requesting a license to possess and use source, byproduct, and special nuclear material and to enrich natural uranium to a maximum of five percent uranium (U)-235 by the gas centrifuge process at the proposed EREF. See SER at xv. On April 23, 2009, AES filed a revised license application that, among other things, would expand the capacity of the facility from 3.3 million separative work units (SWU) per year to 6.6 million SWU per year. See id. This was followed a little over a year later by a second application revision,

¹ AES is a Delaware limited liability corporation and a wholly owned subsidiary of AREVA NC Inc., which in turn is a wholly owned subsidiary of AREVA NC SA, a part of AREVA SA, a corporation formed under the laws of France. The principal owners of AREVA SA include the Commissariat a l'Energie Atomique (French Atomic Energy Commission) and the French State. See Exh. NRC000032, at 1-7 (NMSS, NRC, [SER] for the [EREF] in Bonneville County, Idaho, NUREG-1951 (Sept. 2010)) [hereinafter SER].

In connection with the exhibit citation that is included in the paragraph above, as admitted into the record of this proceeding at the January 25, 2011 evidentiary hearing and reflected in the agency's ADAMS-associated electronic hearing docket, the official exhibit number for each evidentiary item contains a three-alpha character party identifier (i.e., AES, NRC); followed by six alpha and/or numeric characters designed to reflect its number and whether it was revised subsequent to its original submission as a prefiled exhibit (e.g., evidentiary exhibit AESR20031 admitted at the January 25 hearing is the second revised version of prefiled exhibit AES000031); followed by a two-character alpha or numeric identifier that will be employed in this case to indicate that the exhibit was utilized in the mandatory/uncontested portion of this proceeding (i.e., MA); followed by the designation BD01, which indicates that this Licensing Board (i.e., BD01) was involved in its identification and/or admission. Accordingly, the official designation for the staff's SER referenced above is NRC000032-MA-BD01. For the sake of simplicity, however, we will refer to all exhibits admitted in the uncontested portion of this proceeding by their initial nine-character designation only.

which incorporated a variety of changes that reflected AES responses to staff requests for additional information (RAIs), as well as correspondence and telephone conversations with the staff in the course of the staff's application review.² See Letter from James A. Kay, AES Licensing Manager, to NRC Document Control Desk at 1 (Apr. 30, 2010) (ADAMS Accession No. ML101320514). In each instance, portions of the application contained information that AES marked as not being subject to public disclosure. See id. at 1-2.

2.2 On July 23, 2009, the Commission issued a notice of hearing and opportunity to intervene regarding AES's application for a license to construct and operate a gas centrifuge enrichment facility. See 74 Fed. Reg. at 38,052-53 (CLI-09-15, 70 NRC at 4). With respect to the mandatory, uncontested portion of the proceeding, wherein only AES and the NRC staff would be parties, the Commission gave notice that a hearing would be held according to the rules of practice in 10 C.F.R. Part 2, Subparts A, C, G, and, to the extent that classified information became involved, Subpart I. See id. at 38,054 (CLI-09-15, 70 NRC at 7) (citing 10 C.F.R. § 70.23a; AEA section 193, 42 U.S.C. § 2243). And with respect to a possible

² In conducting its licensing review, after assessing the application the staff prepares an SER and makes findings regarding whether, in accord with the AEA, the applicant's proposed equipment, facilities, and procedures will adequately protect public health and safety. See SER at xv. In addition, pursuant to NEPA and the Commission's implementing regulations in 10 C.F.R. Part 51, the staff completes an environmental evaluation and prepares an environmental impact statement (EIS) as a prerequisite to issuance of any license. See id. at xvii. With respect to its NEPA obligations, on May 4, 2009, the staff published notice of its intent to prepare an EIS regarding the construction, operation, and decommissioning of the EREF, which included a request for public comments on the appropriate scope of the issues to be considered in the EIS. See Notice of Intent and Opportunity to Provide Written Comments, [AES] Eagle Rock Enrichment, Idaho Falls, ID, 74 Fed. Reg. 20,508, 20,508 (May 4, 2009). This was followed by the July 14, 2010 issuance of the staff's draft EIS. See Notice of Availability of Draft [EIS] and Public Meeting for the [AES] Proposed Eagle Rock Uranium Enrichment Facility, 75 Fed. Reg. 42,466 (July 21, 2010). Thereafter, on February 10, 2011, the staff issued its final EIS, see Notice of Availability of Final [EIS] for the [AES] Proposed [EREF] in Bonneville County, ID, 76 Fed. Reg. 9054 (Feb. 16, 2011), which is scheduled to be the subject of a separate mandatory hearing evidentiary session during the summer of 2011. See Licensing Board Memorandum and Order (Updated General Schedule) (Mar. 30, 2011) at 2 (unpublished).

contested portion of the proceeding, wherein interested individuals or entities could be parties, the Commission gave notice that any person wishing to participate as a party in the proceeding must file a petition for leave to intervene by September 28, 2009. See id. (CLI-09-15, 70 NRC at 8). Additionally, the Commission gave notice that by that same date, a State, county, municipality, federally-recognized Indian Tribe, or agencies thereof, could participate as (1) a party by submitting an intervention petition to the Commission in accordance with 10 C.F.R. § 2.309(d)(2); or (2) a nonparty interested government entity pursuant to section 2.315(c).³ See id. at 38,055 (CLI-09-15, 70 NRC at 9).

2.3 Because the Commission received no petitions to intervene in response to the July 23, 2009 notice, no contested hearing was convened. Nonetheless, because AES has sought authorization to construct and operate a uranium enrichment facility, in accord with the Commission's hearing notice, a mandatory/uncontested hearing must still be held.⁴

Accordingly, in response to a March 17, 2010 memorandum from the Commission's Secretary,

³ Although ultimately no governmental entity filed a petition to intervene or to participate as an interested governmental entity in the contested portion of this proceeding, in October 2010 the Board provided those entities a further opportunity to participate in the uncontested portion of this proceeding. The Board issued a notice declaring interested governmental entities could take part in the safety/AEA-related portion of the mandatory hearing by filing a statement of any issues or questions about which they wished the Board to give particular attention, which could be accompanied by any supporting documentation that the governmental entity saw fit to provide. See Atomic Safety and Licensing Board; Notice of Opportunity to Participate in Uncontested/Mandatory Hearing (Procedures for Participation by Interested Governmental Entities Regarding Safety Portion of Enrichment Facility Licensing Proceeding), 75 Fed. Reg. 63,213, 63,213 (Oct. 14, 2010). The notice also indicated that, after reviewing any submitted material, the Board might request that one or more particular governmental entities send representatives to the hearing to participate as the Board deemed appropriate, including answering Board questions and/or making a statement for the purpose of assisting the Board's exploration of one or more of the issues raised by the governmental entity in the prehearing filings. See id. There were, however, no filings by State, local, or Native American tribal governments in response to this Board notice.

⁴ AEA section 193(b)(1) provides that "[t]he Commission shall conduct a single adjudicatory hearing on the record with regard to the licensing of the construction and operation of a uranium enrichment facility." 42 U.S.C. § 2243(b)(1) (emphasis added).

see Memorandum from Annette L. Vietti-Cook, NRC Secretary, to E. Roy Hawkens, Chief Administrative Judge (Mar. 17, 2010), on March 26, 2010, the Chief Administrative Judge established a Licensing Board to preside over the mandatory hearing portion of the AES EREF licensing proceeding,⁵ see [AES]; Establishment of Atomic Safety and Licensing Board, 75 Fed. Reg. 16,869, 16,869 (Apr. 2, 2010).

2.4 In a subsequent series of orders, the Board established a schedule for the prescribed mandatory/uncontested hearing.⁶ In establishing a schedule, given the estimated seven-month delay between publication of the SER and final EIS along with the Commission's goal that the Board issue its final initial decision within twenty-eight and one-half months of July 30, 2009, i.e., by November 15, 2011, the Board concluded that to expedite resolution of the uncontested portion of the proceeding, the mandatory hearing should be bifurcated between safety and environmental matters. See Initial Scheduling Order at 3-4. Accordingly, the Board initially scheduled evidentiary hearings for safety-related and environmentally-related matters based on the publication of the SER in August 2010 and the final EIS in February 2011, respectively. See id.

⁵ The originally-designated Board subsequently was reconstituted to substitute Administrative Judge Bollwerk for Administrative Judge Karlin as the Board Chair. See Areva Enrichment Services, LLC (Eagle Rock Enrichment Facility); Notice of Atomic Safety and Licensing Board Reconstitution, 75 Fed. Reg. 52,996 (Aug. 30, 2010).

⁶ See Licensing Board Order (Scheduling Initial Scheduling Conference) (Apr. 12, 2010) (unpublished); Licensing Board Initial Scheduling Order (May 19, 2010) (unpublished) [hereinafter Initial Scheduling Order]; Licensing Board Order (Clarifying Initial Scheduling Order) (June 4, 2010) (unpublished); Licensing Board Order (Setting Aside Hold-Dates for Mandatory Hearings) (June 30, 2010) (unpublished); Licensing Board Memorandum and Order (Status of Dates for Mandatory Hearing Sessions; Staff Status Updates) (Sept. 9, 2010) (unpublished); Licensing Board Memorandum and Order (Initial General Schedule; Revision to Uncontested/Mandatory Hearing Procedures; Inviting Written Limited Appearance Statements and Participation by Interested Governmental Entities) (Oct. 7, 2010) (unpublished) [hereinafter Initial General Schedule]; Licensing Board Memorandum and Order (Providing Presentation Topics and Administrative Directives Associated with Mandatory Hearing on Safety Matters) (Dec. 17, 2010) (unpublished) [hereinafter Board Presentation Topics Order].

2.5 Albeit slightly delayed, on September 30, 2010, the NRC staff issued its SER analyzing the AEA-associated safety-related aspects of AES's license application. See Notice of Availability of [SER]; [AES], [EREF], Bonneville County, ID; NUREG-1951, 75 Fed. Reg. 62,895 (Oct. 13, 2010). Based on the SER and AES's SAR, beginning in late October 2010, the Board issued a series of memoranda and orders posing questions to both AES and the staff, some of which were based on information in the SER and the SAR that was not publicly available, as well as outlining presentation topics for the safety-related portion of the mandatory hearing.⁷ AES and/or the staff filed written responses to the Board's questions, some of which were submitted via the protective order file component of the agency's E-Filing system because they contained information claimed to be privileged or otherwise protected from public disclosure, on November 19 and December 13, 2010, and January 14 and February 1, 2011.⁸

⁷ See Licensing Board Memorandum and Order (Initial Publicly-Available Board Questions Regarding Safety-Related Matters and Associated Administrative Directives) (Oct. 29, 2010) (unpublished) [hereinafter Board Initial Publicly-Available Safety Questions]; Licensing Board Memorandum and Order (Initial Nonpublicly-Available Board Questions Regarding Safety-Related Matters and Associated Administrative Directives) (Oct. 29, 2010) (unpublished) [hereinafter Board Initial Nonpublicly-Available Safety Questions]; Licensing Board Memorandum and Order (Additional Publicly-Available Board Questions Regarding Safety-Related Matters) (Dec. 3, 2010) (unpublished) [hereinafter Board Additional Publicly-Available Safety Questions]; Licensing Board Memorandum and Order (Additional Nonpublicly-Available Board Question Regarding Safety-Related Matters) (Dec. 3, 2010) (unpublished) [hereinafter Board Additional Nonpublicly-Available Safety Question]; Board Presentation Topics Order; Licensing Board Memorandum and Order (Additional Publicly-Available Question Regarding Safety Matters and Identification of "Available" AES Witnesses) (Jan. 21, 2011) (unpublished).

⁸ See Exh. AES000001 (AES Responses to Public Safety Questions) [hereinafter AES Response to Initial Publicly-Available Safety Questions]; AES000018 (AES Responses to Non-Public Safety Questions); Exh. NRC000001 (NRC Staff Responses to Licensing Board's Initial Publicly-Available Questions Regarding Safety Matters) [hereinafter Staff Response to Initial Publicly-Available Safety Questions]; Exh. NRC000020 (NRC Staff Responses to the Licensing Board's Initial Nonpublicly-Available Questions Regarding Safety Matters) [hereinafter Staff Response to Initial Nonpublicly-Available Safety Questions]; Exh. AES000024 (AES Responses to Supplemental Public Safety Questions) [hereinafter AES Response to Additional Publicly-Available Safety Questions]; Exh. AES000029 (AES Responses to Supplemental

(continued...)

2.6 In accord with the Board's October 7, 2010 initial general schedule order, its December 17, 2010 issuance providing administrative directives for the safety portion of the mandatory hearing, and its December 17 hearing notice, see Notice of Hearing (Notice of Evidentiary Hearing and Opportunity to View Hearing via Webstreaming; Opportunity to Submit Written Limited Appearance Statements), 76 Fed. Reg. 387 (Jan. 4, 2011), the Board held an evidentiary hearing on uncontested safety topics on January 25, 2011, at the Licensing Board Panel's hearing room in Rockville, Maryland. At the hearing, witnesses for AES and the staff provided presentations on the following topics:

1. Site-Specific Process-Related Hazards
2. Foreign Ownership and Control
3. License Conditions and Exemptions
4. Commitment Followup and Tracking

2.7 Presentation materials, in the form of slide presentations and supporting documents, were provided to the Board beforehand and admitted as exhibits during the proceeding. See Board Presentation Topics Order at 9. The Board asked questions of the parties' witnesses during the presentations and afforded the witnesses of each party the opportunity to comment upon the responses of the other party's witnesses. See id. at 8.

2.8 Following the January 25 evidentiary hearing, in a February 11, 2011 memorandum and order, the Board adopted certain corrections to the hearing transcript. See Licensing Board Memorandum and Order (Transcript Corrections and Final Transcript Version)

⁸(...continued)

Non-Public Safety Questions; Exh. NRC000023 (NRC Staff Responses to Licensing Board's Supplemental Publicly-Available Questions Regarding Safety Matters); Exh. NRC000027 (NRC Staff Responses to Licensing Board's Additional Questions on Financial Assurance); Exh. AES000063 (AES Responses to Third Supplemental Public Safety Questions); Exh. NRC000125 (NRC Staff Responses to Licensing Board's Second Set of Supplemental Questions on Financial Assurance).

(Feb. 11, 2011) (unpublished). In a subsequent order, the Board admitted into the evidentiary record the AES and staff responses to supplemental questions regarding decommissioning financial assurance matters, and associated supporting documents, and closed the record of the AEA-related safety portion of this mandatory hearing proceeding, except as (1) it concerns decommissioning financial assurance matters; or (2) there is a need to adduce further safety information because of information that may come to light relative to the NEPA-related environmental portion of the hearing. See Licensing Board Memorandum and Order (Admitting Evidentiary Materials and Partially Closing Safety-Related Record) (Feb. 18, 2011) at 2 (unpublished). Regarding financial assurance matters, on that same date the Board certified a question to the Commission, an item that is still pending with the Commission as of the issuance of this PID. See Licensing Board Memorandum (Certifying Question to the Commission Regarding Decommissioning Financial Assurance) (Feb. 18, 2011) (unpublished). Pursuant to the Board's October 7, 2010 memorandum and order, see Initial General Schedule app. A, at 2, AES and the staff filed proposed findings of fact and conclusions of law regarding the mandatory portion of this proceeding on February 25, 2011, see Applicant's Proposed Findings of Fact and Conclusions of Law Concerning Uncontested Safety Issues (Feb. 25, 2011); NRC Staff's Proposed Findings of Fact and Conclusions of Law Concerning Mandatory Hearing on Safety Matters (Feb. 25, 2011) [hereinafter Staff Proposed Safety Findings].

III. APPLICABLE LEGAL STANDARDS

A. General Legal Standards

3.1 As the Commission also noted in its July 2009 hearing notice, AEA section 274c(1), 42 U.S.C. § 2021(c)(1), gives the agency a clear statutory mandate to regulate the construction and operation of a uranium enrichment facility like the EREF. See 74 Fed.

Reg. at 38,057 (CLI-09-15, 70 NRC at 17). Further, AEA sections 53 and 63, 42 U.S.C. §§ 2073, 2093, which concern special nuclear material and byproduct material, provide the general statutory basis under which the agency has adopted the variety of regulations that would govern the proposed EREF's construction and operation. Finally, AEA sections 189a and 193, id. §§ 2239a, 2243, provide the statutory footing for the procedural precepts that apply to the uranium enrichment facility licensing action now before the Board, including the need for (1) the agency to conduct only a single licensing action and adjudicatory proceeding to authorize the construction and operation of the EREF; and (2) a mandatory hearing regarding the AES application and the staff's associated safety and environmental reviews, despite the absence of a petitioner seeking to interpose a challenge to the AES request for such a single license for the EREF.

3.2 Part 70 of title 10 of the Code of Federal Regulations establishes the basic regulatory framework that governs the licensing of an entity such as AES to construct and operate an enrichment facility. Nonetheless, as the Commission also pointed out in its hearing notice, a number of other rules and regulations in 10 C.F.R. Chapter I, including Parts 19, 20, 21, 25, 30, 40, 51, 71, 73, 74, 95, 140, 170, 171, are applicable to licensing a facility to receive, possess, use, transfer, deliver and process byproduct, source, and special nuclear material in the quantities necessary to conduct the activities contemplated at the EREF. See 74 Fed. Reg. at 38,057 (CLI-09-15, 70 NRC at 17).

B. Scope of Licensing Board Review

3.3 As the Commission pointed out in its hearing notice for this proceeding, the agency has been involved in previous proceedings regarding the licensing of proposed uranium enrichment facility sites in Homer, Louisiana (Claiborne Enrichment Center), Eunice, New Mexico (National Enrichment Facility (NEF)), and Piketon, Ohio (American Centrifuge Plant

(ACP)). See 74 Fed. Reg. at 38,057 (CLI-09-15, 70 NRC at 17). Moreover, in the NEF and ACP proceedings, licensing boards conducted mandatory hearings like that now being conducted by this Board. See Louisiana Energy Services, L.P. (National Enrichment Facility), LBP-06-17, 63 NRC 747 (2006), Commission review declined, Memorandum from Annette L. Vietti-Cook, NRC Secretary, to Board and Parties (Sept. 20, 2006) (ADAMS Accession No. ML062630201); USEC, Inc. (American Centrifuge Plant), LBP-07-6, 65 NRC 429 (2007), Commission review declined, Letter from Annette L. Vietti-Cook, NRC Secretary, to Geoffrey Sea (June 11, 2007) (ADAMS Accession No. ML071620395). Additionally, mandatory hearings have been conducted by licensing boards in four 10 C.F.R. Part 52 early site permit proceedings.⁹ As a result, a significant body of case law exists indicating what a licensing board's responsibilities are, and are not, in this context.

3.4 Essentially, a licensing board is to “conduct a simple ‘sufficiency’ review” rather than a de novo review on both AEA and NEPA issues. Exelon Generation Co., LLC (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 39 (2005). Thus, boards “should decide simply whether the safety and environmental record is ‘sufficient’ to support license issuance. In other words, the boards should inquire whether the NRC Staff performed an adequate review and made findings with reasonable support in logic and fact.” Id. There is, however, a caveat in that boards are instructed to make independent environmental judgments with respect to certain

⁹ See Southern Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), LBP-09-19, 70 NRC 433 (2009), Commission review declined, Memorandum from Annette L. Vietti-Cook, NRC Secretary, to Board and Parties (Jan. 4, 2010) (ADAMS Accession No. ML100040233); Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site), LBP-07-9, 65 NRC 539, permit issuance authorized, CLI-07-27, 66 NRC 215 (2007); Sys. Energy Res., Inc. (Early Site Permit for Grand Gulf ESP Site), LBP-07-1, 65 NRC 27, permit issuance authorized, CLI-07-14, 65 NRC 216 (2007); Exelon Generation Co., LLC (Early Site Permit for Clinton ESP Site), LBP-06-28, 64 NRC 460 (2006), permit issuance authorized, CLI-07-12, 65 NRC 203 (2007).

NEPA findings,¹⁰ though even then they "need not rethink or redo every aspect of the NRC Staff's environmental findings or undertake their own fact-finding activities." Id. at 44; see also North Anna ESP, LBP-07-9, 65 NRC at 559-60. The board's role thus is to "carefully probe [staff] findings by asking appropriate questions and by requiring supplemental information when necessary," but "the NRC Staff's underlying technical and factual findings are not open to board reconsideration unless, after a review of the record, the board finds the NRC Staff review inadequate or its findings insufficient." Clinton ESP, CLI-05-17, 62 NRC at 39-40.

3.5 Additionally, in a mandatory hearing, a licensing board "must narrow its inquiry to those topics or sections in Staff documents that it deems most important and should concentrate on portions of the documents that do not on their face adequately explain the logic, underlying facts, and applicable regulations and guidance." Exelon Generation Co., LLC (Early Site Permit for Clinton ESP Site), CLI-06-20, 64 NRC 15, 21-22 (2006).

C. Required Board Safety Findings

3.6 In the initial July 2009 hearing notice for this proceeding, the Commission outlined the legal and factual safety matters the presiding officer would be responsible for considering in conducting the adjudicatory proceeding relating to the AES application to construct and operate the EREF. Relative to AEA-related safety items (as opposed to NEPA-related environmental issues), these include whether the application satisfies the

¹⁰ As was noted in the Board's initial scheduling order, these findings require the Board independently to (1) determine whether the requirements of section 102(2)(A), (C) and (E) of NEPA and Subpart A of 10 C.F.R. Part 51 have been complied with in the proceeding; (2) consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; and (3) determine, after weighing the environmental, economic, technical, and other benefits against the environmental and other costs, and considering reasonable alternatives, whether a license should be issued, denied, or appropriately conditioned to protect environmental values. See Initial Scheduling Order attach. A, at 9. In addition, relative to NEPA, the Board is to determine whether the review conducted by the staff pursuant to 10 C.F.R. Part 51 has been adequate. See id.

standards set forth in that notice and the applicable standards of 10 C.F.R. Parts 30 (regarding byproduct material), 40 (regarding source material), and 70 (regarding special nuclear material) as they apply to the construction and operation of a uranium enrichment facility. See 74 Fed. Reg. at 38,053-54 (CLI-09-15, 70 NRC at 7). More specifically, the Commission directed that if the proceeding is not a contested proceeding, i.e., the proceeding is an uncontested/mandatory hearing rather than one in which a petitioner seeks to challenge the AES application in accord with the procedures specified in 10 C.F.R. Part 2, Subpart C, then in connection with AEA-related safety matters the licensing board is to determine whether (1) the application and record of the proceeding contain sufficient information; and (2) whether the NRC staff's review of the application has been adequate to support findings to be made by the NMSS Director with respect to whether the AES application meets the applicable standards of Parts 30, 40, and 70. See id.; see also Initial Scheduling Order attach. A, at 9.

3 .7 Against the backdrop of these governing statutory and regulatory standards, and with the Commission's directives regarding the Board's responsibility to make safety-related findings in mind, we turn to our consideration to the issues identified by the Board and the information provided by the parties.

IV. FACTUAL FINDINGS AND LEGAL CONCLUSIONS

A. Evidentiary Hearing Issues

4 .1 In setting forth the Board's determinations relative to the mandatory hearing portion of this Part 70 licensing proceeding, we begin with the subject matter of the various presentations that were made by AES and the staff in response to the Board's requests for additional information on those four particular items.

1. Site-Specific Process-Related Hazards

a. Introduction

4.2 The genesis of this presentation topic was the staff's response to the Board's initial publicly-available safety question 6(a) regarding the circumstances under which new restricted data (RD) might be generated relative to the EREF. In its answer, the staff indicated:

New RD could be created if the European centrifuge machines perform differently in the U.S. For example, it is believed that the climate in New Mexico [where the Louisiana Energy Services (LES) NEF is located] may have an impact on the centrifuge machines such that their performance (i.e., speed/frequency, temperatures, pressures, efficiency, power consumption, etc.) may be outside of the historical ranges of the machines in Europe. Similar or other locality-specific factors may impact the performance of the centrifuge machines in Idaho. . . . Any performance data found outside of the historical ranges would be considered new RD.

Staff Response to Initial Publicly-Available Safety Questions at 13-14. This reply engendered another publicly-available Board safety question, number 28, in which the Board inquired of the parties:

taking a broader view, please list the locality-specific factors that could adversely affect safety at the proposed EREF, but are generally not considered to be potential threats to safety in Europe. Also, please briefly discuss the process used to identify locality-specific potential safety hazards to the proposed EREF and to assure that all factors were identified.

Board Additional Publicly-Available Safety Questions at 3-4. This resulted in the following response from applicant AES:

For process-related hazards, the principal locality-related differences between the Idaho site and those in Europe are elevation and climatology (as was similarly true for LES). In light of these differences, [items relied upon for safety (IROFS)]-related Instrumentation and Control [(I&C)] systems will need to have setpoints that accommodate the lower atmospheric pressure at elevation (approximate elevation 1,585 [meters] (5,200 [feet]) in Idaho versus elevations near sea level in Europe). Ventilation performance and trip levels, as well as pressures for system

purging, will also need to account for the elevation differences. IROFS setpoint control is described in Section 3.8 of the [ISAS] (Exh. AES000040).

AES Response to Additional Publicly-Available Safety Questions at 6. Thereafter, in specifying the presentation topics for the evidentiary hearing on AES-related safety matters, the Board indicated that, in light of this applicant response, on the subject of “Site-Specific Process-Related Hazards” the parties should prepare a presentation that:

discusses (a) the methodology used to identify any potential site-specific process-related hazards at the EREF relative to centrifuges at European sites or the LES site; (b) the potential site-specific process-related hazards, and the underlying site differences that could create those hazards, that were identified for the EREF relative to the European or LES centrifuges; and (c) why those potential process-related hazards were determined not to be safety-significant, including an explanation of how the systems at the proposed EREF will accommodate the site-specific differences that were identified as creating the potential hazards.

Board Presentation Topics Order at 2.

b. Witnesses and Evidence Presented

4 .3 AES, which was the sole presenter for this topic, provided three witnesses to discuss how it identified and analyzed site-specific process-related hazards associated with the EREF. These witnesses provided oral testimony, in conjunction with their prefiled slide presentation that was admitted as an exhibit, at the evidentiary hearing. See Tr. at 166-77; Exh. AES000061 (AES Presentation on Topic 1: Site-Specific Process-Related Hazards) [hereinafter AES Site-Specific Process-Related Hazards Presentation]. Additionally, the staff provided testimony from two witnesses.¹¹

¹¹ Although the staff seated three witnesses in connection with this topic, only two testified at the hearing on this topic.

i. AEA Witnesses

4 .4 George A. Harper received a Bachelor of Science (B.S. or B.Sc.) degree and a Master of Science (M.S.) degree in Civil Engineering from the University of Massachusetts. See Exh. AES000011, at 2 (Resume of George A. Harper, P.E). He is currently the AES Vice President, Engineering and Licensing. See id. at 3. Before he joined AES in 2009, he was with AREVA NP Inc./Duke Engineering and Services for more than eleven years during which he served in a number of different positions in which he performed and managed various safety evaluations and analyses in support of nuclear plant engineering, environmental, licensing, design, and operations. See id. at 3-4. He also served as a principal engineer for Yankee Atomic Electric Company (YAEC) for nearly fifteen years and as an engineer with Dubois and King, Inc. See id. at 4-5.

4 .5 Christopher A. Andrews received a B.Sc. degree in Physics from the University of London. See Exh. AES000022, at 1 (Curriculum Vitae (CV) of Christopher Arthur Andrews). Since 1993, he has served as the Design, Safety, and Licensing Manager/Engineering Manager for Enrichment Technology (UK) Limited, during which he has been involved in developing the key features of the design and safety analyses for the gas centrifuge enrichment plant at Tricastin, France, as well as the LES NEF facility in Eunice, New Mexico, and the proposed EREF in Idaho. See id. at 2. Prior to that, he worked for URENCO, Fluor Daniel, Inc., British Nuclear Fuels Limited, Uranit GmbH, and Centec GmbH. See id. at 1-2.

4 .6 Scott M. Tyler received a B.S. degree in Fire Protection and Safety Engineering Technology from Oklahoma State University. See Exh. AES000016, at 1 (Resume of Scott M. Tyler). Since 1995, he has served as an Advisory Engineer in fire, safety, and risk services for AREVA NP, Inc. See id. During the decade before that, he was an engineer with AcuTech

Consulting, Inc., and ABB Impell Corp., providing project management and technical leadership on various process safety/risk management programs. See id. at 1-2.

ii. Staff Witnesses

4 .7 Ms. Breeda Reilly has a Bachelor of Engineering degree in Chemical Engineering from Cooper Union and a Master of Public Policy (M.P.P.) degree in Environmental Policy from the University of Maryland. See Exh. NRC000015, at 1 (M. Breeda Reilly Statement of Professional Qualifications (SPQ)). Having joined the NRC in 2005 as a chemical safety reviewer, she currently works in Advanced Fuel Cycle, Enrichment, and Uranium Conversion Branch, Fuel Facility Licensing Directorate (FFLD), Division of Fuel Cycle Safety and Safeguards (FCSS), NMSS, where she serves as the Senior Project Manager responsible for the EREF licensing review. See id. During the decade prior to joining NRC, she worked as a chemical engineer for the U.S. Environmental Protection Agency and the National Security Agency on projects involving chemical accident prevention and the assessment of potential occupational exposures and environmental releases from commercial chemical processes. See id.

4 .8 Rex G. Westcott has a B.S. degree in Physics and an M.S. degree in Engineering Science from Clarkson College as well as a B.S. degree in Fire Protection Engineering from the University of Maryland. See Exh. NRC000019, at 1 (Rex G. Wescott SPQ). Since joining the NRC in 1978, he has served in various positions as a hydrologist and later as fire protection engineer, currently serving as Senior Fire Protection Engineer, Uranium Enrichment Branch/FFLD/NMSS. See id. at 1-2. Prior to joining the NRC, Mr. Wescott worked as a hydrologist with Ebasco Services and Woodward-Clyde Consultants performing engineering evaluations for commercial nuclear power facilities, hydroelectric projects, and other groundwater contamination remediation projects. See id. at 2.

4 .9 Based on the respective qualifications and experience of the proffered witnesses, the Board finds each of these AES and staff witnesses qualified to testify regarding the site-specific process-related hazards associated with the EREF.

c. Regulations and Guidance Relating to Site-Specific Process-Related Hazards

4 .10 Under 10 C.F.R. § 70.62, each applicant for a Part 70 license is required to establish and maintain a safety program, which includes performing an integrated safety analysis (ISA). See 10 C.F.R. § 70.62(c). Among other things, the ISA must consider potential accident sequences caused either by deviations in the processes that will be conducted at the proposed facility or by credible external events, including natural phenomena. See id. § 70.62(c)(iv).

4 .11 To perform an appropriate ISA, the staff's NUREG-1520 standard review plan (SRP) guidance for fuel cycle facilities indicates that the applicant should identify the process designs, accident sequences, and IROFS that are associated with the facility. See Exh. NRC000070, at 3-9 (NMSS, NRC, [SRP] for the Review of a License Application for a Fuel Cycle Facility, NUREG-1520 (rev. 1 May 2010)) [hereinafter Revised Staff Fuel Cycle SRP]; see also Exh. NRC000031, at 3-8 to -9 (NMSS, NRC, [SRP] for the Review of a License Application for a Fuel Cycle Facility, NUREG-1520 (Mar. 2002)) [hereinafter Staff Fuel Cycle SRP].¹² In that regard, the process designs should be described in a level of detail that is sufficient to allow a

¹² As is reflected in its SER, the staff's review of the AES application was based on the March 2002 version of the staff's fuel cycle facility SRP rather than the May 2010 SRP revision that was adopted just before the SER for the EREF was issued by the staff. See SER at 1-38. In response to a Board question about any differences between the two documents as they related to its EREF review, the staff indicated that in general the changes consisted of editorial and formatting changes, reference updates, and expanded technical rationales concerning the acceptance criteria that had no impact upon the staff's review of the AES application. See Staff Response to Initial Publicly-Available Safety Questions at 26-27. As a consequence, particularly when referring to the standards employed by the staff in reviewing the AES ISAS and the associated IROFS, we will reference the updated discussion in SRP revision 1.

staff reviewer to understand the theory of operation for the process. Similarly, the IROFS should be described in sufficient detail to allow a staff reviewer to understand the IROFS's functions in relation to the performance standards in section 70.61, which specifies limitations on the levels of risk for credible high- and intermediate-consequence accidents and nuclear criticality accidents. See Revised Staff Fuel Cycle SRP at 3-9 to -10.

4 .12 Along with the requirement to perform an ISA is the requirement to provide the staff with an ISAS. See 10 C.F.R. § 70.65(b). The ISAS is to contain descriptions of (1) site and facility characteristics that could affect safety and potential accidents and their consequences; (2) processes, hazards, and accident sequences, which includes a description of every process analyzed in the ISA, the hazards for each process, and the accident sequences associated with such hazards having unmitigated consequences that exceed the section 70.61 performance requirements; (3) the methods and team used by the applicant to perform the ISA; and (4) IROFS and the IROFS management measures used to ensure that IROFS are available and reliable to perform their functions when needed. See id.; see also Revised Staff Fuel Cycle SRP at 3-8. Further, because fuel cycle facilities are in substantial part chemical processing plants, in its ISA guidance document, NUREG-1513, the staff recommends the use of a number of chemical hazard assessment methodologies, including the Hazard and Operability Analysis (HAZOP) method for analyzing the potential hazards associated with the uranium hexafluoride (UF_6) process systems at the EREF. See SER at 3-7; see also Exh. NRC000087, at 8-10 (NMSS, NRC, [ISA] Guidance Document, NUREG-1513 (May 2001)).

d. Evidentiary Findings

4 .13 To identify site-specific process-related hazards, in developing its required ISA AES used the staff's NUREG-1520 guidance to produce two discrete sets of EREF hazards. One was the process-related hazards that might come from process components. The other was Idaho-specific external events that could impact the facility. Further, in developing the process-related hazards, AES personnel used the HAZOP methodology endorsed in NUREG-1513, in particular the HAZOP methodology developed by Enrichment Technology Company (ETC). The ETC HAZOPs were only the starting point, however, as they were modified using EREF design documents to define each of the "nodes" or segments of the EREF systems subject to an ISA review so as to develop fully an EREF HAZOPs analysis. Part of this process also included developing supplemental process deviation initiator or site-specific external event "guidewords" to reflect EREF-specific initiators or external events, which were then applied to each EREF system node to identify potential hazards and accident sequences caused by process deviations or credible external events. See Tr. at 167-68 (Tyler Test.); AES Site-Specific Process-Related Hazards Presentation at 4, 6; SER at 3-7, 5-14.

4 .14 In performing this analysis, AES did not explicitly compare either the EREF process-related hazards or Idaho external events with those events/hazards that might be applicable to any other European or American centrifuges, such as the facilities operated by URENCO or LES. According to AES, this was neither necessary under the staff's NUREG-1520 guidance nor practical given it would involve getting access to other competitors' proprietary information. Instead, the standalone analysis for the EREF was informed by the experience of the AES ISA team members who performed the analysis, which included individuals representing the centrifuge vendor who have participated in process-related hazards analyses

for other sites, including those in Europe and North America. See Tr. at 169-70 (Tyler Test.); AES Site-Specific Process-Related Hazards Presentation at 7.

4 .15 As set forth in section 3.1 of the AES ISAS, see Exh. AES000040 tbl. 3.1-1, at 1 ([EREF ISAS] ch. 3 (rev. 2 Apr. 30, 2010)),¹³ the list of process deviation initiators includes items such as more heat/less heat, more pressure/less pressure, and high flow/low flow. In considering these process deviation initiators as part of the HAZOP process, the ISA team was to identify all the potential initiators that could cause the particular condition to occur and then seek to identify safeguards and associated mitigations to address these initiators. Analyzing these factors, the AES ISA team did not identify any process-related hazards unique to Idaho as compared to any other existing centrifuge site, given that centrifuges are sub-atmospheric closed systems that only require venting or purging at certain connection points and so generally are not sensitive to locality-related differences. AES did indicate, however, that to the degree facility equipment, such as an autoclave, is operationally sensitive to atmospheric pressure, although these equipment sensitivities were determined to have no safety significance, instrument set points will be adjusted to account for pressure differences arising from the higher site elevation in Idaho as compared to other sites. See Tr. at 169, 173-75 (Tyler Test.), 176 (Andrews Test.); AES Site-Specific Process-Related Hazards Presentation at 7, 9.

4 .16 Relative to external events, the ISA Idaho-specific external event guidewords used to assess hazards included volcano, seismic, fire, tornado, transportation accident, snow, and ice. To determine the relevance of these in the context of the EREF, the ISA team reviewed publicly-available information from sources, including the LES application, which resulted in some external events being added for analysis, such as volcanism, and others being

¹³ We note that although this document was submitted for the record as a nonpublic document, the information cited was discussed during the January 2011 public evidentiary hearing without objection from the parties.

eliminated, such as natural gas pipelines. Thereafter, for those external events that were deemed applicable, the ISA team drew on other studies, reports, and expert analyses by consultants, such as that performed by AES consultant Dr. William R. Hackett regarding volcanism, see section IV.B.1.b.i infra, to assess the safety-significance of those potential hazards and the need for system or facility accommodations and protective measures to address those hazards and their potential consequences. See Tr. at 171-72 (Harper Test.); AES Site-Specific Process-Related Hazards Presentation at 7, 9.

4 .17 The staff concluded that the AES process as outlined above and reflected in the SER satisfies the applicable regulations and NUREG-1520 guidance. The staff also indicated that its own review of the AES ISA was informed by its recent review of the LES facility, which utilizes similar enrichment technology, and other enrichment plants, taking into account problems and issues that arose relative to those facilities. See Tr. at 170 (Reilly Test.), 170-71 (Wescott Test.).

e. Board Conclusions Regarding Site-Specific Process-Related Hazards

4 .18 A comparison between either the EREF process-related hazards or Idaho external events and those events/hazards that might be applicable to any other European or American centrifuges, such as the facilities operated by URENCO or LES, seems capable of providing useful information. Nonetheless, in the circumstances here we do not consider the AES-admitted lack of any explicit comparison of that kind to be a licensing impediment for the EREF. Based upon the evidentiary record, in particular the use by AES of ISA team members who had participated in process-related hazards analyses for other similar sites, including those in Europe and North America, the Board concludes that the AES ISA methodology was appropriate for analyzing both EREF process-related hazards and Idaho external events that could impact the facility and that the record provided a reasonable basis for the staff to conclude

that this process met the applicable regulatory requirements in section 70.65(b) to perform an appropriate ISA and provide an adequate ISAS.

2. Foreign Ownership and Control

a. Introduction

4 .19 Recognizing that the AEA contains restrictions on the foreign ownership and operation of the nuclear facilities in the United States and that various parent companies of AES are foreign corporate entities, in its SER the staff nonetheless declared that placing foreign ownership, control, or influence (FOCI) mitigation measures on AES “would provide no additional benefit to the National Security of the United States.” SER at 1-8. As a basis for this conclusion, the staff suggested that the same reasoning that supported waiving FOCI mitigation for the grant of a facility security clearance to URENCO (a United Kingdom conglomerate) for the NEF should also apply to AES (a subsidiary of a French conglomerate) for the EREF. See id. at 1-7 to -8. According to the staff, both AES and LES would use the same ETC-supplied classified technology. For AES's EREF, just as for URENCO's NEF, “[t]he information and technology that [would] be classified as [RD] in the United States are already owned and controlled by the European Governments and the foreign-controlled companies associated with URENCO and AREVA.” Id. at 1-8. That is, the information and technology in question would be classified under United States law only because it would be introduced into the United States, not because of its potential for generating new RD. Moreover, the staff declared, little if any new RD is likely to be created as a result of the EREF. See id. Nevertheless, the staff also noted, protocols to be established pursuant to a pending Pentapartite Agreement (between the United States and four European Governments) will be instituted to prevent new RD from being disseminated to European nationals. See id.

4 .20 The staff further claimed in its SER that AES's classified matter plan (CMP) for the protection of classified matter at the proposed EREF facility will satisfy 10 C.F.R. Part 95 when implemented. See id. at 1-8, 1-16 to -17. Even so, the staff found it to be prudent to impose two classified matter-related license conditions, discussed in more detail at section IV.A.3.d infra. Relative to the first of these, as the staff notes in the SER, prior to receipt of classified matter AES must receive authorization from the NRC to implement its CMP. CMP implementation, however, is contingent upon an NRC inspection and finding that AES's classified matter program at EREF is in accord with the CMP. To effectuate this process, the staff imposed a license condition to ensure that the clearances under 10 C.F.R. Part 95 are obtained before classified matter is processed, stored, reproduced, transmitted, handled or accessed. See id. at 1-17. Additionally, because AES has not yet designated the areas on the EREF site where the use and handling of classified information will occur, the staff imposed another license condition to ensure that areas used for handling classified information are properly protected by requiring AES to first notify the NRC and confer about additional security measures, prior to designating the classified information handling areas. See id.

4.18 Citing these provisions of the SER, in question 6(a) of its first set of public safety questions the Board asked AES and the staff under what circumstances could new RD be created and what would that information concern. See Board Initial Publicly-Available Safety Questions attach. A, at 3. The staff responded that new RD could be created if the centrifuges were to perform differently in the United States than in Europe. According to the staff, centrifuge performance would be compared to historical data produced in Europe and any performance data found outside of the historical ranges would be considered new RD. See Staff Response to Initial Publicly-Available Safety Questions at 13-14.

4 .21 Referencing this portion of the SER, in its initial safety questions the Board also asked whether ratification/implementation of the Pentapartite Agreement is a prerequisite to the issuance of the AES license and if ratification/implementation would result in additional safety-related licensing submissions by AES and/or safety-related licensing review analyses by the staff. See Board Initial Publicly-Available Safety Questions attach. A, at 3. The staff responded that although the Pentapartite Agreement would not be a prerequisite to the issuance of the AES license, it would be a prerequisite to the staff issuing a facility clearance under 10 C.F.R. § 95.15. Moreover, the staff observed, without the agreement there would be no mechanism to allow AES to receive the classified centrifuges for installation in its proposed EREF. See Staff Response to Initial Publicly-Available Safety Questions at 14.

4 .22 With these responses in mind, as well as the staff's finding that no FOCI mitigation measures are necessary despite the fact that AES is part of the French public industrial conglomerate AREVA SA, the Board requested that the parties make a mandatory hearing evidentiary presentation on the topic of foreign ownership and control. Specifically, the Board directed the parties to prepare presentations addressing two issues:

- a. The statutory and regulatory framework regarding foreign ownership and control of uranium enrichment facilities such as the EREF, including a description of how that regulatory scheme compares to that applicable to power reactor facilities constructed and operated under 10 C.F.R. Parts 50, 52.
- b. The potential effects foreign ownership could have on the ability of an entity like AES to meet its safety, environmental, financial, and security responsibilities and how the management and financial structure of AES relative to AREVA SA provides AES with appropriate management and financial independence, including a discussion addressing the following questions:
 - i. Can financial difficulties of the parent corporation result in truncation or termination of the EREF project or,

conversely, if AES cannot otherwise obtain necessary funding, will the parent corporation supply such capital?

- ii. How does AES management and AES financial and operational structure differ from that of a typical United States corporate subsidiary of a foreign company in an instance when there are no statutory or regulatory controls on foreign ownership such as exist under the AEA and NRC regulations?

Board Presentation Topics Order at 3.

b. Witnesses and Evidence Presented

4 .23 Both the staff and AES made presentations on foreign ownership and control, with the staff acting as the lead, solo presenter on the topic 2a presentation concerning the statutory and regulatory basis for any foreign ownership and control restrictions, and AES acting as the lead, solo presenter for the topic 2b presentation regarding AES's management and financial independence. The staff and AES provided testimony by two witnesses and a single witness, respectively, regarding these presentation topics in conjunction with the parties' prefiled slide presentations, which were admitted as exhibits at the evidentiary hearing. See Tr. at 182-90, 202-03 (staff), 190-201, 202-03 (AES); Exh. NRCR00101 (NRC Staff Presentation Topic 2a Foreign Ownership and Control) [hereinafter Staff Presentation on Foreign Ownership and Control]; Exh. AESR00062 (AES Presentation Topic #2b Foreign Ownership and Control) [hereinafter AES Presentation on Foreign Ownership and Control]. The staff also relied upon the Commission-adopted SRP on foreign ownership, control, or domination, which was admitted as an exhibit. See Exh. NRC000103 (Final [SRP] on Foreign Ownership, Control, or Domination, 64 Fed. Reg. 52,355 (Sept. 28, 1999)) [hereinafter Foreign Ownership SRP].

4 .24 After the staff and AES presentations, the Board asked additional questions regarding how the EREF corporate structure compares to the corporate structure of LES, the

NEF licensee that also has a foreign corporate parent, URENCO. Answers to these supplemental questions were provided by two additional staff witnesses. See Tr. at 203-09.

i. Staff Witnesses

4 .25 Ms. Reilly's background and qualifications are discussed at section IV.A.1.b.ii supra.¹⁴

4 .26 Anneliese Simmons received a Bachelor of Arts (B.A.) degree in Political Science and French from the University of Kansas and an M.P.P. degree from the University of Maryland. She is currently a Financial Analyst in the NRC Office of Nuclear Reactor Regulation, Division of Policy and Rulemaking. Ms. Simmons has over eighteen years of professional experience at various federal agencies and nonprofit organizations, with a focus on financial policy. See Exh. NRC000102, at 1 (Anneliese Simmons SPQ).

4 .27 Timothy C. Johnson received a B.S. degree in Mechanical Engineering from Worcester Polytechnic Institute and an M.S. degree in Nuclear Engineering from the Ohio State University. He is currently a Senior Project Manager and Senior Mechanical Systems Engineer in NMSS/FCSS. He also serves as the Licensing Project Manager for the General Electric-Hitachi Global Laser Enrichment uranium enrichment plant with responsibility for coordinating the licensing review of the facility. Previously, from 2000 to 2009 he served as the Project Manager of the LES uranium enrichment plant from the project's inception, through licensing, and into initial plant construction. See Exh. NRC000110, at 1 (Timothy C. Johnson SPQ).

4.26 Tyrone Daniel Naquin received a B.S. degree in Biology from Southwestern Oklahoma State University and an M.S. degree in Health Physics from Texas A&M University.

¹⁴ Although the staff proffered three witnesses in connection with its initial presentation on topic 2a, only Ms. Reilly and Ms. Simmons testified at the hearing on this topic.

Mr. Naquin has twenty-seven years experience as a health physicist, having worked first for the Department of the Navy, then as an Air Force contractor, and finally since 2008 for the NRC. He currently serves as the project manager for the LES NEF in Eunice, New Mexico. See Exh. NRC0001111, at 1 (Tyrone D. Naquin SPQ).

ii. AES Witnesses

4.26 Sam Shakir is the AES president and chief executive officer (CEO). Mr. Shakir received a Bachelor's degree in Engineering from Concordia University in Montreal and a Masters of Business Administration degree from the University of California at Berkeley. Before assuming his current position, Mr. Shakir held various positions at Areva, including vice president of sales and strategy for spent fuel management. See Exh. AES000013 (Resume for Sam Shakir).

4.26 Based on the respective qualifications and experience of the proffered witnesses, the Board finds each of these staff and AES witnesses qualified to testify regarding foreign ownership and control.

c. Regulations and Guidance Relating to Foreign Ownership and Control

4 .28 The AEA and agency regulations govern the extent to which a foreign entity may own or control an NRC licensed activity. The form of that regulatory oversight depends on the type of license sought.

4 .29 In its hearing opportunity notice regarding AES's application, the Commission directed that because the AES application for a uranium enrichment facility was governed by AEA sections 53 and 63, 42 U.S.C. §§ 2073, 2093, foreign ownership and control issues would be evaluated under AEA sections 57 and 69, id. §§ 2077, 2099,¹⁵ rather than AEA

¹⁵ The Commission implemented these AEA sections in 10 C.F.R. § 70.31(d) and 10 C.F.R. § 40.32(d), respectively. See 74 Fed. Reg. at 38,058 (CLI-09-15, 70 NRC at 19). In
(continued...)

sections 103, 104, or 193(f), id. §§ 2133, 2134, 2243(f).¹⁶ See 74 Fed. Reg. at 38,058 (CLI-09-15, 70 NRC at 19). The principal difference between those two respective sets of provisions (i.e., AEA sections 57 and 69 v. AEA sections 103, 104, and 193(f)) is that while both prohibit the Commission from granting a license that would be “inimical to the common defense and security or the health and safety of the public,” only under the latter would the Commission be prohibited from granting a license “if the Commission knows or has reason to believe [the applicant] is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.” Compare 42 U.S.C. § 2099 with id. § 2133(d). Therefore, in this proceeding the agency may deny AES a license based on foreign ownership, control, or domination concerns to the extent it concludes granting such a license would be inimical to the common defense and security or the health and safety of the public. See Crowe Butte Resources, Inc. (North Trend Expansion Project), CLI-09-12, 69 NRC 535, 571 (2009) (materials license regulations contain no express prohibition on foreign ownership, but require staff to make a finding that license issuance will not be inimical to the common defense and security or the health and safety of the public).

4.30 For power reactors, in implementing these regulations the agency developed a Commission-approved SRP to assist in evaluating applications for reactor licenses or applications for the transfer of such licenses. See Foreign Ownership SRP, 64 Fed. Reg.

¹⁵(...continued)

both regulatory sections, the pertinent language tracks the statutory language identically, i.e., “inimical to the common defense and security or the health and safety of the public.”

¹⁶ The Commission implemented these AEA sections in various regulations, including 10 C.F.R. § 40.38(a) (relating to the United States Enrichment Corporation (USEC)), 10 C.F.R. § 50.38 (concerning nuclear power reactors), and 10 C.F.R. § 70.40 (also relating to USEC), in which the pertinent language again tracks the statutory language identically. We note that while sections 40.38(a) and 70.40 do apply to enrichment facility licensee USEC, their application is limited to USEC alone, so that they have no relevance to AES or any other enrichment facility applicant.

at 52,355. The SPR indicates that after conducting a threshold review, as supplemented by additional information, if the staff concludes that “the applicant may be considered to be foreign owned, controlled, or dominated, or that additional action would be necessary to negate the foreign ownership, control, or domination,” the applicant “shall be promptly advised and requested to submit a negation action plan.” Id. at 52,359. The purpose of the negation action plan would be to implement measures that effectively negate or deny foreign control or domination. See id. at 52,359.

4 .31 Relative to the issue of foreign ownership or control, the NRC also imposes restrictions on the physical security and control of information at licensed facilities to safeguard RD and national security information. See 10 C.F.R. Part 95. Under 10 C.F.R. § 70.22(m), the application for a uranium enrichment facility is required to contain a description of the security program to protect against unauthorized disclosure of classified matter in accord with Part 95. And under Part 95, AES would be required, among other things, to complete the NRC facility security clearance process, which entails an NRC-approved CMP, on-site inspections, and the granting of individual NRC personnel security clearances. A facility security clearance also requires a determination that granting the clearance “would not be inconsistent with the national interest, including a finding that the facility is not under foreign ownership, control, or influence to such a degree that a determination could not be made.” 10 C.F.R. § 95.17(d)(1). Thus, for a uranium enrichment facility, foreign ownership or control is evaluated in the context of the facility security clearance process as well.

d. Evidentiary Findings

4 .32 During its mandatory hearing presentation, the staff provided information regarding its legal interpretation of the statutory and regulatory framework that governs foreign ownership, control, or domination for uranium enrichment facilities such as the EREF. The staff

also provided its views on the differences between the legal regime governing uranium enrichment facilities, licensed under Part 70, and that for power reactors, licensed under Parts 50 and 52. Thereafter, AES made a presentation on the safety, environmental, security, management, and financial implications of AES being owned by a foreign parent corporation and AES's ability to meet its regulatory obligations, in particular its ability to make independent determinations about safety matters.

i. Staff Presentation on Foreign Ownership and Control

4 .33 In its July 2009 notice regarding the AES application, the Commission directed the staff to evaluate issues of foreign involvement pursuant to AEA sections 57 and 69,¹⁷ which the staff asserted requires, among other things, an affirmative finding by the agency that issuance of a license for the EREF “cannot be inimical to the common defense and security.” Tr. at 183 (Reilly Test.); Staff Presentation on Foreign Ownership and Control at 3-4.

4 .34 In contrast, according to the staff, foreign involvement regarding power reactors is evaluated pursuant to AEA section 103.¹⁸ See Tr. at 183 (Reilly Test.); Staff Presentation on Foreign Ownership and Control at 7. This section, the staff declared, precludes granting a license to an entity “owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.” Staff Presentation on Foreign Ownership and Control at 5 (quoting AEA section 103, 42 U.S.C. § 2133). As a result, the staff maintained, foreign ownership and control regulations are more restrictive under Parts 50 and 52 for power reactors than under Part 70 for uranium enrichment facilities. See Tr. at 183-84 (Simmons Test.).

¹⁷ These AEA provisions are, according to the staff, implemented by 10 C.F.R. §§ 40.32(d), 70.22(a)(1), 70.31(d), 70.40. See Staff Presentation on Foreign Ownership and Control at 9.

¹⁸ These AEA provisions, according to the staff, are implemented by 10 C.F.R. §§ 50.33, 50.38, 50.80. See Staff Presentation on Foreign Ownership and Control at 7.

4 .35 To assist in evaluating the issue of foreign ownership or control of power reactor applicants and licensees, the staff indicated it utilizes the Commission-adopted SRP on foreign ownership and control, which prohibits full or total ownership, control, or domination by a foreign entity. The staff declared, however, that the SRP sets no other thresholds. In other words, the staff declared, some lesser degree of foreign ownership or control may be permissible, provided the foreign involvement can be mitigated by a negation action plan. As described by the staff, typical measures in a negation action plan include requiring senior managers to be United States citizens, establishing board of directors voting requirements that exclude foreign directors, and forming a nuclear advisory committee with only United States directors maintaining oversight of safety and security. See Tr. at 184-85 (Simmons Test.); Staff Presentation on Foreign Ownership and Control at 7-8.

4 .36 According to the staff, Part 95 of title 10 of the Code of Federal Regulations also contains requirements that are relevant in assessing the foreign ownership or control concerns associated with the AES application because AES parent companies are foreign-owned. As described by the staff, Part 95 addresses the protection of information, such as through a facility security clearance, and is applicable to the AES application through 10 C.F.R. § 70.22(m). In particular, the staff declared, section 95.17 requires a determination that granting a facility clearance is not inconsistent with the national interest, including a finding that the facility is not under foreign ownership, control, or influence. Thus, the staff indicated that foreign ownership or control evaluations for an enrichment facility are also part of the facility clearance process. See Tr. at 187 (Reilly Test.); Staff Presentation on Foreign Ownership and Control at 10-11.

4 .37 With respect to AES, the staff has determined there would be no additional national security benefit to the United States if foreign ownership, control, or domination mitigation measures were placed on AES. This staff finding is footed in its conclusion that, as

with NEF licensee LES, the information and technology subject to security classification are already owned and controlled by the European governments and foreign-controlled companies associated with AES. The staff therefore has decided that foreign ownership or control mitigation measures should be waived for AES.¹⁹ See Tr. at 187-88 (Reilly Test.); Staff Presentation on Foreign Ownership and Control at 11.

4 .38 Finally, with regard to LES, which now is a limited liability corporation under foreign-controlled parent URENCO, the staff maintained that at the time of licensing LES was organized very similarly to AES in that LES had an American chief nuclear officer, as does AES, who would be responsible for making decisions regarding health, safety, and quality assurance (QA). See Tr. at 206-07 (Johnson Test.). Acknowledging there have been minor revisions to the LES corporate structure following licensing, the staff nonetheless declared that its corporate structure is “all still pointing towards one guy at the top.” Tr. at 207 (Naquin Test.). Moreover, according to the staff, the issue of protecting the improper dissemination of information also was an issue in LES and was resolved based on a staff review and determination like that being made for AES. See Tr. at 207-08 (Johnson Test.).

ii. AES Presentation on Foreign Ownership and Control

4 .39 With respect to the AES corporate structure, AES LLC is a Delaware corporation entirely owned by AREVA NC, Inc., also an American corporation. AREVA NC, Inc., in turn, is owned by AREVA NC SA, a foreign company formed under the laws of France. AREVA NC SA is part of the larger conglomerate AREVA SA, whose principal owners include the Commissariat a l'Energie Atomique (French Atomic Energy Commission) and the French State. This tiered

¹⁹ As the basis for this finding in its SER, the staff relied upon several Department of Energy documents, that, although purported to be nonpublic, see SER at 1-8, apparently are publicly available, see Letter from Carrie M. Safford, NRC Staff Counsel, to Licensing Board at 1 (Oct. 26, 2010).

structure of subsidiaries matches that of AREVA's existing fuel fabrication facility in Richland, Washington, which is already licensed under 10 C.F.R. Part 70. AREVA NC SA and AREVA SA also are involved in providing broad-based fuel cycle and engineering services around the world, including uranium mining, conversion, and enrichment; fuel fabrication; reactor construction and operation; and non-nuclear energy production technology such as wind and solar. See Tr. at 192-93 (Shakir Test.); supra note 1.

4 .40 As AES LLC president and CEO, Mr. Shakir has sole responsibility and decision-making authority on safety, security, environmental, and financial matters. His responsibilities in this regard are dictated by federal, state, and local requirements, not by foreign ownership considerations. His role thus is similar to that of a chief nuclear officer at a nuclear power plant. And although he ultimately is answerable to AES LLC's management committee for management matters such as hiring and firing, the committee would have no influence on safety or QA during the construction, operation, or decommissioning of the EREF, an arrangement that would be unaffected by the fact AES LLC has foreign parents. See Tr. at 194-95 (Shakir Test.); AES Presentation on Foreign Ownership and Control at 5-6.

4 .41 AES LLC also has financial independence from its parents by reason of the enrichment contracts that exist between AES LLC and its customers and under which AES LLC can collect revenue from SWU sales directly. Revenue would only flow to the parents by routine corporate finance channels, e.g., for repayment of debt or by distribution of dividends in excess of expenses. Moreover, nothing about the financial or ownership arrangements between AES LLC and its foreign parents is unique or different as compared to other NRC licensees. See Tr. at 195-96 (Shakir Test.); AES Presentation on Foreign Ownership and Control at 7.

4 .42 With respect to AES LLC's financial qualifications, the staff in its SER found that, subject to certain conditions, AES LLC is financially qualified to construct and operate the

EREF. See Tr. at 198 (Shakir Test.); AES Presentation on Foreign Ownership and Control at 10 (citing SER at 1-10). Nonetheless, as with any commercial venture, AES LLC may be affected by financial difficulties associated with its corporate parents, changing market conditions, or other unforeseen conditions. NRC regulations address this inherent commercial risk by requiring that adequate financial assurance arrangements are in place properly to decommission EREF at any stage of construction or operation. Moreover, as an indicator of AES LLC's future financial viability, AES LLC today has several billion dollars worth of SWU contracts in place with various American utilities, an amount that would be sufficient to fund EREF operation for more than five years. See Tr. at 198-200 (Shakir Test.); AES Presentation on Foreign Ownership and Control at 10-12.

4 .43 Finally, AES the management, financial, and operational structure of AES LLC do not differ from that of a typical NRC-licensed United States corporate subsidiary of a foreign company, nor would its business structure be any different even if there were no statutory or regulatory controls on foreign ownership such as exist under the AEA and NRC regulations. Nor are foreign ownership considerations a driving consideration for the AES LLC corporate structure or governance approach. See Tr. at 200-01 (Shakir Test.); AES Presentation on Foreign Ownership and Control at 15.

e. Board Conclusions Regarding Foreign Ownership and Control

4 .44 Based on the SER foreign ownership and control analysis and the parties' responses to prehearing written questions regarding this subject, the Board focused its review of foreign ownership and control on several aspects of this issue. Consistent with the Commission's direction that in this proceeding foreign ownership and control concerns about the AES application should be evaluated pursuant to AEA sections 57 and 69, the pertinent analysis becomes whether granting a license to AES would be "inimical to the common defense

and security or the health and safety of the public.” 74 Fed. Reg. at 38,058 (CLI-09-15, 70 NRC at 19). At the same time, Commission regulations require AES to obtain a facility security clearance, which would include a determination that granting the clearance “would not be inconsistent with the national interest, including a finding that the facility is not under foreign ownership, control, or influence to such a degree that a determination could not be made.” 10 C.F.R. § 95.17. Thus, for the EREF, foreign ownership and control also is evaluated by way of the facility clearance process.

4 .45 With respect to the need for mitigation of foreign ownership and control, relative to the grant of a facility security clearance the staff adequately considered the benefit of additional mitigation measures on the national security of the United States. Comparing AES’s position to that of LES, the staff concluded that because the information and technology that would be classified as RD in the United States are already owned and controlled by the European governments and the foreign-controlled companies associated with AES and LES, foreign ownership, control, or influence mitigation measures relating to security information would provide no additional benefit to the United States. We find the staff’s argument in this regard logical and agree that foreign ownership, control, or influence mitigation measures are not warranted for AES.

4 .46 Additionally, relative to mitigation measures that might be necessary to address the corporate and financial structure of AES, the Board reviewed the staff’s analysis of AES management and financial independence from its various foreign parents. As he indicated in his sworn testimony, as AES president and CEO, Mr. Shakir, a naturalized American citizen, see SER at 1-7, has sole responsibility and decision-making authority on safety, security, environmental, and financial matters, a role similar to that of a chief nuclear officer at a nuclear

power plant, which should insulate him from foreign control or domination relative to these vital operational matters.

4 .47 The Board also reviewed the staff's findings regarding AES's financial qualifications relative to potential foreign ownership and control. As Mr. Shakir conceded, as a commercial venture, AES may face financial risk from financial difficulties with its parent corporations, changing market conditions, or other unforeseen conditions. Nevertheless, in addition to having the income from several billion dollars worth of SWU contracts in place with various American utilities, AES would need to comply with any license conditions and NRC regulations requiring that adequate financial assurance arrangements be in place to decommission the EREF properly at any stage of construction or operation. AES thus should be able to meet all decommissioning requirements, independent of its foreign parentage, or any financial risks that might accrue therefrom.

4 .48 Finally, the Board considered the differences between AES's management, financial, and operational structures and that of a typical NRC-licensed United States corporate subsidiary of a foreign company. There appears to be no real difference between the AES approach and that of other NRC licensees, regardless of whether the ultimate parent is foreign or domestic, an observation that staff witnesses confirmed at least insofar as it applies to the corporate structures of AES and the already-licensed LES. From our review, we see no grounds for challenging Mr. Shakir's observation that foreign ownership considerations do not drive AES corporate structure for the EREF.

4 .49 Based on the foregoing, the Board finds that the staff reasonably concluded that (1) issuance of a license to AES would not be "inimical to the common defense and security or the public health and safety"; and (2) foreign ownership, control, or influence mitigation

measures relative to AES's facility security clearance would provide no additional benefit to the national security of the United States so that the need for such measures can be waived.

3. License Conditions and Exemptions

a. Introduction

4 .50 As was noted in the Commission's recent staff requirements memorandum regarding the procedures the Commission will employ in conducting the mandatory hearings associated with the 10 C.F.R. Part 52 combined license proceedings for new reactors, a principal focus of the Commission will be upon "non-routine matters." Memorandum from Annette L. Vietti-Cook, NRC Secretary, to Stephen G. Burns, NRC General Counsel, and Brooke Poole, Director, NRC Office of Commission Appellate Adjudication at unnumbered p. 2 (Dec. 23, 2010) (ADAMS Accession No. ML103570203). Almost by definition, license conditions imposed on an applicant as a result of the staff's review process and applicant-requested exemptions from agency regulatory requirements that are granted by the staff have a strong potential to fall into such a "non-routine matter" category. Indeed, these items have been the subject of scrutiny in a variety of other mandatory hearing contexts. See, e.g., Vogtle ESP, LBP-09-19, 70 NRC at 540; USEC, Inc., LBP-07-6, 65 NRC at 442-46.

4 .51 In the Licensing Board's October 2010 initial round of questions to the parties, noting that various sections of the AES SAR stated that the provisions of "this license application are similar to those submitted for [NRC] review in the [LES] license application for the [NEF]," the Board asked what the staff found to be the significant safety-associated differences between the AES and LES enrichment facility applications and to discuss how those variations resulted in differences in the staff's analysis of those matters, including any license conditions or exemptions/variances. Board Initial Publicly-Available Safety Questions attach. A, at 1 (quoting Exh. AES000037, at 2.0-1 ([EREF SAR] (rev.2 Apr. 30, 2010)) [hereinafter AES

SAR]. In addition, the Board asked for a listing of all staff SER-approved license conditions and exemptions. See id. at 7. After reviewing the staff's November 19 questions response, which included a listing of the conditions/exemptions that are to be applicable to any EREF Part 70 license, see Staff Response to Initial Publicly-Available Safety Questions at 2-4, 28-36, in its December 17 order the Board requested that the parties provide a presentation at the January 2011 hearing session regarding the various license conditions/exemptions. The Board asked that the presentation outline the reasons why each of these license conditions/exemptions is needed and, if applicable, explain any differences that may exist between these license conditions/exemptions and the provisions of the current LES Part 70 NEF license and any exemptions granted relative to the LES license. See Board Presentation Topics Order at 3-4.

b. Witnesses and Evidence Presented

4 .52 The staff took the lead for this presentation topic, its slides for which were admitted into evidence, see Exh. NRCR00104 (NRC Staff Presentation Topic 3, License Conditions/Exemptions) [hereinafter Staff License Conditions/Exemptions Presentation]. In addition, the staff presented two tables showing a comparison between the license conditions and the exemptions/special authorizations that were utilized for the LES facility and those proposed for the EREF. See Exh. NRC000118 (Table 1: Comparison of AES and LES Requests for Exemptions and Special Authorizations) [hereinafter AES/LES Exemptions/Authorizations Comparison]; Exh. NRC000119 (Table 2: Comparison of AES and LES License Conditions) [hereinafter AES/LES License Conditions Comparison].

i. Staff Witnesses

4 .53 Relative to the evidentiary presentation on this subject, see Tr. at 215-43, 246-47, the principal staff witness was Breeda Reilly, whose background and

qualifications were previously outlined in section IV.A.1.b.ii supra. In addition, the staff provided two other witnesses, one who testified about an exemption granted for the procurement of safety-related equipment, and one who testified concerning the staff's inspection process relative to a proposed license condition allowing AES to make changes to its SAR in certain instances without prior NRC notification or approval. AES also made three witnesses available to answer Board questions on this topic.

4 .54 In addition to Ms. Reilly, Damaris Arroyo appeared as a staff witness. Ms. Arroyo serves as a QA Engineer in the Mixed Oxide (MOX) and Uranium Deconversion Branch, FCSS/NMSS. Ms. Arroyo, who holds a B.S. degree in Chemical Engineering from the University of Puerto Rico – Mayaguez Campus, is responsible for reviewing the QA aspects of new license applications, license renewals, license amendments, and exemptions for material licensees. See Exh. NRC000106, at 1 (Damaris Arroyo SPQ).

4 .55 Also appearing on behalf of the staff was Deborah Seymour. Ms. Seymour, who has a B.S. degree in Chemical Engineering and Materials Engineering from the University of Connecticut, currently serves as the Branch Chief in Construction Projects Branch 1/Division of Construction Projects/Center for Construction Inspection (CCI)/NRC Region II, a position in which she provides direction and oversight for the construction inspection programs at fuel facilities under construction in the United States, including the LES NEF. During her twenty-three years with the agency, she has held a variety of other inspection-related positions, including NEF senior project inspector, resident inspector at the Sequoyah Nuclear Power Plant, and an inspector for radiological effluents and chemistry and material control and accounting at fuel facilities and reactors. See Exh. NRC000121, at 1 (Deborah Seymour SPQ).

ii. AES Witnesses

4 .56 The background and qualifications for two of the AES witnesses, Scott Tyler and George Harper, were set forth previously in section IV.A.1.b.i supra. The other AES witness was Jim Kay, the Licensing Manager for the AES EREF. Mr. Kay holds a B.S. degree in Mechanical Engineering from the University of Rhode Island, an M.S. degree in Nuclear Engineering from the University of Lowell, and an M.S. degree in Management from Lesley College. See Exh. AES000012, at 1 (Resume of James A. Kay). Prior to becoming the EREF Licensing Manager in 2009, he served for eight years as a Licensing Engineering Supervisor/Advisory Engineer for AREVA, NP Inc., supervising engineering work on the U.S. Evolutionary Power Reactor design certification effort and managing site licensing activities at YAEC's Yankee Nuclear Power Station. Before joining AREVA, he was employed by YAEC for twenty-five years in several engineering positions. See id. at 2-3.

4 .57 Based on the respective qualifications and experience of the proffered witnesses, the Board finds each of these staff and AES witnesses qualified to testify regarding the license conditions and exemptions associated with the EREF.

c. Regulations and Guidance Relating to License Conditions and Exemptions

4 .58 Under Parts 70, 40, and 30, which provide the regulatory basis for the licensing of the different types of nuclear materials utilized in the operation of the EREF, the agency is permitted in issuing a license to impose such additional conditions, requirements, and limitations as may be necessary to effectuate the purposes of the AEA and the agency's regulations. See 10 C.F.R. §§ 30.34(e), 40.41(e), 70.31(a), (b)(2). Regarding the staff's evaluation findings concerning a particular application, in its fuel cycle facility SRP guidance the staff notes that it may

recommend license conditions to address any issues that were not previously resolved by an applicant's commitments. Such conditions are discussed with an applicant before issuing the license (or license amendment) and become commitments to performance in addition to those commitments that the applicant presented in the application.

Revised Staff Fuel Cycle SRP at 7.

4 .59 Additionally, Parts 30, 40, and 70 provide for exemptions to their requirements, with each containing a provision stating that the agency may grant exemptions to the requirements imposed by that part if the agency determines such an exemption is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. See 10 C.F.R. §§ 30.11(a), 40.14(a), 70.17(a). According to the staff's SRP guidance for fuel cycle facilities, an applicant seeking an exemption should "clearly describe[] any exemptions or authorizations of an unusual nature and adequately justif[y] them for the NRC's consideration." Revised Staff Fuel Cycle SRP at 1-7.

d. Evidentiary Findings

4 .60 The proposed EREF license will contain sixteen license conditions. Four of these will be standard conditions that are imposed generally for a license such as AES is seeking, another ten will be specific to the EREF, one will concern an exemption, and one reflects a special authorization request. Additionally, AES has requested an exemption separate from its EREF license application. See Tr. at 216-17 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 3. The staff has included a discussion of the various license conditions/exemptions/special authorizations in the relevant sections of the SER. See id. at 217 (Reilly Test.).

4 .61 The proposed financial qualifications license condition found in SER chapter 1 was developed as a result of the staff's evaluation of the AES estimate of the costs associated with EREF construction and operation and AES's stated commitment to provide updated cost

estimates for each incremental phase prior to initiating construction. Essentially, this proposed condition requires AES to demonstrate that suitable funding for each phase of construction is available and committed before construction of that phase begins. By way of contrast, the LES license did not have a similar condition because LES made a commitment that the construction of the NEF would not begin before funding for construction of the entire facility was fully committed. See Tr. at 217-18, 219-20 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 4; see also AES/LES License Conditions Comparison at 1; SER at 1-9.

4 .62 The second license condition proposed by the staff, also in SER chapter 1, concerns nuclear liability insurance. Under 10 C.F.R. § 140.13b, the holders of a Parts 40/70 uranium enrichment facility license are required to maintain adequate nuclear liability insurance, with proof of such insurance necessary prior to a license being issued. The proposed condition would mandate that AES provide proof of full liability insurance of \$300 million at least thirty days prior to the date upon which it plans to obtain source or special nuclear material. The LES license also had such a condition tied to its receipt of feed material for the NEF facility, but that condition included a clause (which the AES license would not have) that permitted LES, if it proposed to provide less than \$300 million of liability insurance coverage, to furnish for staff review and approval at least 120 days prior to the planned date for obtaining feed material an evaluation supporting liability insurance coverage in an amount less than \$300 million. See Tr. at 218-19 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 5; see also AES/LES License Conditions Comparison at 1; SER at 1-10 to -11; Exh. NRC000060, encl. at 2 (Letter from Joseph G. Giitter, Chief, Special Projects Branch, FCSS/NMSS, to Karl Gross, Licensing Manager, LES, encl. (June 23, 2006) (NRC Materials License No. SNM-2010)) [hereinafter LES License].

4 .63 A third SER chapter 1 proposed license condition concerns the possession and handling of classified matter. Although the staff as part of its safety review has concluded that the EREF CMP, which specifies the practices for processing, handling, and accessing classified matter, meets the requirements of 10 C.F.R. Part 95, the staff still must perform a readiness review before classified matter can actually be brought onto the EREF site. This proposed license condition, which is similar to one imposed in the LES license, is needed to ensure that the clearances required under Part 95 are obtained before classified material is processed, handled, or accessed on the EREF site. See Tr. at 220 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 6; see also AES/LES License Conditions Comparison at 1; SER at 1-17; LES License at 5.

4 .64 The final SER chapter 1 proposed license condition also relates to information security. As part of its CMP, AES committed to following Nuclear Energy Institute information security program guideline 08-11, which addresses the protection of classified information, equipment, and technology. This includes the area in the facility that will be routinely used for handling and disseminating classified information. Under this proposed license condition, AES is to notify the staff before designating this area, which it has not yet done, so that the staff can determine if additional security measures are required. The condition also indicates that if NRC does determine the need for additional security measures, an amendment request must be submitted by AES and approved prior to establishing and using the area or areas. A similar condition was imposed on the LES license, albeit after the license was issued initially. See Tr. at 220-21 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 7; see also AES/LES License Conditions Comparison at 2; SER at 1-16 to -17; Exh. NRC000114, at 10 (NRC Materials License No. SNM-2010, amend. 45) [hereinafter LES Amended License].

4 .65 The AES decommissioning strategy is the focus of a proposed license condition in SER chapter 10 that mandates, prior to beginning construction, AES must perform additional radiation survey activities to document the background radiation level at the EREF site in accord with NUREG-1757, appendix A, see Exh. NRC000117, at A-1 to -3 (2 NMSS, NRC, Consolidated Decommissioning Guidance, NUREG-1757, app. A (rev.1 Sept. 2006)). Specifically, the proposed condition calls for dividing the site into four survey units, and taking fifteen surface soil samples per survey unit (i.e., sixty additional soil samples). The proposed condition also specifies where sample collections should be taken, including (1) the detention and retention basins; (2) the full tails, full feed, and empty cylinder storage pads north of the main facilities; (3) the technical services building, the blending, sampling, and preparation building, separations building modules (SBM), UF₆ handling areas, and full product cylinder storage pad; and (4) areas on-site, but outside those that are scheduled to be disturbed during plant construction. Although a condition like this was not part of the LES license, it is intended to ensure there is an adequate pre-facility radiation contamination baseline for use in decommissioning planning when it becomes time to return the site to unrestricted use. See Tr. at 222-23 (Reilly Test.); Tr. at 223-24 (Kay Test.); Staff License Conditions/Exemptions Presentation at 8; see also AES/LES License Conditions Comparison at 2; SER at 10-3 to -6.

4 .66 AES's initial approach to providing decommissioning financial assurance was to fully fund the estimated cost of decontamination and decommissioning of the full-sized facility and the estimated cost for dispositioning the depleted uranium (DU) tanks generated during the first three years of operation. AES later sought an exemption to the financial assurance requirements in sections 40.36(d) and 70.25(e) of the Commission's regulations to modify this approach to one, similar to what was used for the LES facility, that would fund incrementally the areas and buildings as they were placed into operation. As a consequence, a license condition

in SER chapter 10, which is similar to the original conditions in the LES license, implements a forward-looking, incremental AES approach by establishing a schedule for the submission of the decommissioning fund plan, decommissioning cost estimates, and financial instrument updates on a periodic basis six months prior to the planned date for (1) the delivery of test material to the centrifuge assembly building; (2) the first delivery of natural UF₆ as feed material for the first SBM and annually thereafter; and (3) the receipt of initial feed material for each of the three subsequently planned SBMs. See Tr. at 224-25 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 9; see also AES/LES License Conditions Comparison at 1; SER at 10-7 to -12; LES License at 2-3; LES Amended License at 7-8.

4 .67 IROFS, the “items relied on for safety” that are a central focus of the ISA process, see 10 C.F.R. § 70.62(c), are the subject of three proposed license conditions. The first is intended to address an issue that arose relative to the NEF licensing process with the defined “boundaries” for IROFS. Under the risk-informed performance-based requirements of 10 C.F.R. § 70.61, applicants must ensure that each IROFS will be available and reliable to perform its function when needed in the context of the performance requirements stated in section 70.61. Further, so that the staff may implement the related requirement of 10 C.F.R. § 70.32(k) calling for a pre-operational inspection, or operational readiness review (ORR), an applicant is to provide an IROFS boundary package to verify that a facility is constructed in accord with all license requirements. See Revised Staff Fuel Cycle SRP at 3. This package contains the physical descriptions and parameters of structures, systems, and components that are used to meet the requirements of section 70.61, as well as the administrative procedures or worker actions that are defined as IROFS. Boundary packages also identify the specific functions to be performed by an IROFS, and any items that may affect the function of an IROFS. See id. n.4.

4 .68 In its NEF application, LES indicated that upon completion of the final facility design, the IROFS boundaries would be defined using its internal procedures. In AES SER appendix A, the staff added this LES commitment as a condition to the NEF license, as well as required that the IROFS boundaries be available at the ORR. See AES/LES License Conditions Comparison at 5. As a result of the staff's experience with the LES IROFS information during the ORR process, which the staff considered important input to its facility inspection process, the staff proposes adding a condition to the EREF license that would require all IROFS information provided to the staff also conform with the staff's SRP guidance in appendix B to chapter 3 of NUREG-1520, see Revised Fuel Cycle SRP at 3-B-1 to -13, and that such information be accessible prior to the ORR. See Tr. at 225-26 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 10; see also AES/LES License Conditions Comparison at 5-6; Exh. NRC000033, at A-20 to -23 (SER app. A ISA and ISAS (Sept. 2010)); LES License at 3.

4 .69 The second IROFS-related condition concerns facility operator actions. This license condition, which is similar to one included in the LES license, is intended to incorporate an AES commitment made in its SAR section 3.3.8 under which the staff human factors guidance in NUREG-0700, see Office of Nuclear Regulatory Research (RES), NRC, Human-System Interface Design Review Guidelines, NUREG-0700 (rev. 2 May 2002) (ADAMS Accession Nos. ML021700337, ML021700342, ML021700371), and NUREG-0711, see RES, NRC, Human Factors Engineering Program Review Model, NUREG-0711 (rev. 2 Feb. 2004) (ADAMS Accession No. ML040770540), would be the benchmarks for the human factors engineering review and implementation plan for operator actions IROFS. See Tr. at 226-27 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 11; see also AES/LES

License Conditions Comparison at 6; Exh. NRC000079, at D-2 to -3 (SER app. D Human Factors (Sept. 2010));²⁰ LES License at 4.

4 .70 The final IROFS-related license condition, which is found in SER appendix E, concerns the IROFS relating to electrical system and I&C. This requirement to seek further NRC review and approval is being imposed because I&C design for the EREF was not complete at the time of the staff's review and so did not include any IROFS that might use software, firmware, microcode, programmable logic controllers, or other digital devices. If in completing its I&C design AES should choose to incorporate digital controls into the EREF design, which AES witness Mr. Harper indicated was a possibility, see Tr. at 229 (Harper Test.), prior NRC approval would need to be sought before implementing such devices. See Tr. at 227-28 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 12; see also AES/LES License Conditions Comparison at 6; Exh. NRC000080, at E-18 to -22 (SER app. E Electrical Power and Instrumentation and Control Systems (Sept. 2010));²¹ LES License at 3-4.

4 .71 A proposed license condition found in SER appendix H relates to the EREF's fundamental nuclear material control program. Under 10 C.F.R. § 70.32(c), a uranium enrichment facility license must have a condition requiring the licensee to (1) maintain and follow a source material control and accounting (MC&A) program; and (2) maintain records of any MC&A program changes made without Commission approval for five years from the date of the change. Reports to the agency regarding such unapproved changes must be filed within no more than six months after the change. See 10 C.F.R. § 70.32(c)(2). The appendix H license

²⁰ Although this document was submitted for the record as a nonpublic document, the information cited was discussed during the January 2011 public evidentiary hearing without objection from the parties.

²¹ This document also was submitted for the record as a nonpublic document, but the information cited was discussed during the January 2011 public evidentiary hearing without objection from the parties.

condition, which is similar to one in the LES license, requires that AES obtain agency approval, by way of a license amendment request, for any change that would decrease the effectiveness of its MC&A program. Additionally, the condition mandates that a record of any changes made without agency approval be maintained for five years and that a report containing a description of each unapproved change be sent to the agency within six months of the change if it pertains to uranium enriched less than twenty percent in the uranium-235 isotope. Moreover, if AES made such an unapproved change that AES later determined did decrease MC&A effectiveness, it would be obligated to report the matter to the NRC and take corrective action, with its misidentification report becoming an inspection/enforcement issue. See Tr. at 228-29 (Reilly Test.), 229 (Kay Test.); Staff License Conditions/Exemptions Presentation at 13; see also AES/LES License Conditions Comparison at 8; Exh. NRC000081, at H-7 to -8 (SER app. H Material Control and Accounting (Sept. 2010));²² LES License at 5.

4.72 Also proposed by the staff as an EREF license condition is a so-called “tie down” condition that is placed in most fuel cycle facility licenses, including the LES license. Under that condition, AES is required to conduct authorized activities at the EREF in accordance with the statements, representations, and conditions found in the following application-related documents: SAR and ER, PSP, FNMCP, QA program description, EP, SPMP for protection of RD and other classified matter, and decommissioning funding plan. This incorporation by reference is intended to ensure that the various AES representations and commitments in these documents are legally enforceable by the agency. See Tr. at 229-31 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 14; see also AES/LES License Conditions Comparison at 9; LES License at 1-2.

²² Once again, although this document was submitted for the record as a nonpublic document, the information cited was discussed during the January 2011 public evidentiary hearing without objection from the parties.

4 .73 As was the case with the LES authorization, the staff's post-construction/pre-operation ORR is the subject of another of the proposed EREF license conditions. Although construction of a fuel cycle facility can begin as soon as the license authorizing the facility is granted, under 10 C.F.R. § 70.32(k), prior to facility operation, i.e., prior to the introduction of UF₆ into any EREF module, NRC must verify through inspection that the facility was constructed in accordance with the agency's regulatory requirements and the requirements of the license. To ensure this process is followed, the AES license is to include a condition that states successful completion of the ORR is a pre-requisite to facility operation. Additionally, the condition provides that the licensee must give the Commission 120 days notice that it intends to introduce UF₆ into a facility module to permit the agency sufficient time to plan and carry out the required ORR. See Tr. at 230-31 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 15; see also AES/LES License Conditions Comparison at 9; LES License at 2.

4 .74 Also included as a license condition is a provision that outlines the term of the proposed AES license. Agency regulations require that the applicant indicate the period of time for which the Part 70 license is requested. See 10 C.F.R. § 70.22.(a)(3). Under an NRC policy established in 2006, the term of a fuel cycle license runs from ten to forty years. In this instance, because AES requested a term of thirty years, which is within this licensing range, this is the term the staff proposes to grant in this license condition. The LES license also had a condition specifying a thirty-year license term. License extensions of a similar length, i.e., ten to forty years, can also be sought, by way of a license renewal/amendment request, and could be granted if justified. See Tr. at 231-32 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 17; see also AES/LES License Conditions Comparison at 9-10; LES License at 2.

4 .75 In addition to license conditions, the staff also proposes to grant several AES requests for an exemption from regulations that would otherwise govern the EREF. One of these concerns decommissioning financial assurance. As the staff discussed in chapter 10 of the SER, in requesting an exemption from the decommissioning funding requirements of sections 40.36(d) and 70.25(e) of the agency's regulations, AES sought authorization to provide financial assurance on a forward-looking, incremental basis. The regulations now require that financial assurance instruments in an amount sufficient to cover the total estimated cost of decommissioning be in place at the time the facility is ready to begin operations, along with funding sufficient to disposition the full amount of DU expected to be generated during the facility's thirty-year life. To avoid AES being required to fund decommissioning costs for the entire planned facility even if only a portion of the centrifuges have been installed, the staff proposes to approve the exemption and, as was the case with the LES license, interpose a separate license condition, see supra p. 46, to address AES's schedule for updating the decommissioning funding plan and financial assurance instruments over time as the facility is completed. See Tr. at 231, 235-36 (Reilly Test.); Staff License Conditions/Exemptions Presentation at 16, 19; see also AES/LES License Conditions Comparison at 9; AES/LES Exemptions/Authorizations Comparison at unnumbered p. 1; AES SAR at 1.2-4 to -6; SER at 1-13 to -14; LES License at 2-3.

4 .76 Separate from its license application, in a June 17, 2009 submission, AES requested an exemption from the requirements of sections 30.4, 30.33(a)(5), 40.4, 40.32(e), 70.4, and 70.23(a)(7) of the agency's rules to permit it to begin certain preconstruction activities at the EREF site before completion of the NRC's environmental review under 10 C.F.R. Part 51. Under this exemption request, which was not made by the LES for the NEF, none of the facilities or activities covered would be a component of the AES PSP or its practice and

procedures plan for the protection of classified matter, or otherwise subject to NRC review or approval, although the activities may be subject to state or local government oversight and permitting authority. Among the activities authorized are clearing the site; site grading and erosion control; excavating the site, including rock blasting and removal; installing parking areas; constructing a storm water detention pond; constructing highway access roadways and site roads; installing utilities and storage tanks; installing fences for investment protection (rather than physical security plan implementation); and installing construction buildings, offices, warehouses, and a guardhouse. As of the time of the January 2011 evidentiary hearing, AES had done some road construction, culvert work, and site clearing, with plans in spring 2011 to start blasting and site excavation. Although these preconstruction activities will be considered in the context of their environmental impacts in the staff's final EIS, the staff environmental assessment of the exemption request evaluated only the fact that these activities are considered to be outside NRC jurisdiction and that they will be evaluated as part of the staff's EIS associated with licensing the EREF. See Tr. at 232-34 (Reilly Test.), 234-35 (Harper Test.); Staff License Conditions/Exemptions Presentation at 18; see also AES/LES Exemptions/Authorizations Comparison at unnumbered p. 2; Exh. NRC000082, at 1 (Letter from David H. Dorman, Director, FCSS, NMSS, to George Harper, Licensing Manager, AES (Mar. 17, 2010)).

4 .77 Also the subject of a separate January 29, 2010 AES request was an exemption from the 10 C.F.R. § 21.3 definitions of "commercial grade items," "basic component," "critical characteristic," "dedication," and "dedicated entity." According to NRC witness Ms. Arroyo, the thrust of this exemption granted by the staff on July 28, 2010, is to permit AES to have some procurement flexibility. With the exemption, AES is able to dedicate an IROFS commercial grade component itself, by verifying the quality of the component it acquired from a

nondedicated vendor using AES's own QA program, rather than having to purchase the commercial grade component from a dedicated entity that has already been approved as a source of qualified commercial grade components. This is especially helpful, according to AES witness Mr. Harper, in procuring IROFS components from overseas suppliers. See Tr. at 238-39 (Arroyo Test.), 239 (Harper Test.); Staff License Conditions/Exemptions Presentation at 20; see also Exemptions/Authorizations Comparison at unnumbered p. 2; Exh. NRC000040, at 1 (Letter from James A. Kay, Licensing Manager, AES, to NRC Document Control Desk (Jan. 29, 2010)); Exh. NRC000041, at 1 (Letter from Daniel H. Dorman, Director, FCSS, NMSS, to James A. Kay, Licensing Manager, AES (July 28, 2010)); LES Amended License at 8-9.

4 .78 Finally, the staff proposes to include a condition in the AES license that incorporates a special authorization sought by AES to permit it to make changes to its SAR without seeking prior NRC approval. As set out in section 11.1.4 of the AES application, this authorization would permit AES to make SAR changes without NRC approval if the changes do not decrease the effectiveness of safety commitments in the application. Any change not meeting this criteria must be submitted to the agency for approval prior to implementation. No prior approval is needed, however, for a change that AES determines does not (1) degrade the safety commitments in the license application; and (2) conflict with any specific condition in the license application. AES must document such a change, including showing a technical justification and management approval, in dedicated records that would be available for NRC inspection upon request. Additionally, within three months of implementing an unapproved SAR change, AES must submit a report to NRC that describes the change and provides a revised application section reflecting the change. See Tr. at 240 (Reilly Test.).

4 .79 According to the staff, this authorization is consistent with the approach to application changes set forth in 10 C.F.R. § 70.72 to the degree it includes criteria for judging

whether NRC pre-implementation approval is necessary and provides for documentation of the AES evaluation determination, recordkeeping requirements for that documentation, a timely update of the SAR provisions changed, and eventual reporting of the changes to NRC. Although LES did not request such authorization, the staff found the AES request appropriate based on the staff's experience in conducting the LES ORR and in administering similar authorizations at other facilities such as the Westinghouse Columbia, South Carolina fuel fabrication facility. Moreover, if AES is found to have made an inappropriate determination about the need for agency pre-approval of an SAR change, the agency's inspection and enforcement program would come into play. See Tr. at 240-42 (Reilly Test.), 246-47 (Seymour Test.); Staff License Conditions/Exemptions Presentation at 21; see also Exemptions/Authorizations Comparison at unnumbered pp.1-2; Exh. NRC000064, at 1-2 (E-mail from Jim Kay, Licensing Manager, AES, to Breeda Reilly, NRC (Aug. 20, 2010)); SER at 1-14 to -15.

e. Board Conclusions Regarding License Conditions and Exemptions

4 .80 Several of the license conditions imposed on AES, including the "tie down" condition, appear to be in the nature of standard directives that could be incorporated into the rules that govern Part 70 applicants and licensees. Nonetheless, given that the choice between rulemaking and adjudication (i.e., issuing orders or other license revisions) is within the agency's discretion, see Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-01-12, 53 NRC 459, 474 (2001), this ultimately is a matter of efficiency for the staff to determine.

4 .81 Potentially more problematic in this regard is the exemption granted by the staff to allow AES to begin preconstruction activities at the EREF site. Current Parts 30, 40, and 70 requirements state that for a proposed nuclear materials-related activity, including uranium

enrichment, “commencement of construction” relative to that activity prior to a favorable staff conclusion regarding the NEPA cost-benefit balance associated with the proposed activity is “grounds for denial” of the authorization to conduct that activity. 10 C.F.R. §§ 30.33(a)(5) (byproduct material), 40.32(e) (source material), 70.23(a)(7) (special nuclear material). Further, existing Parts 30, 40, and 70 regulations define “commencement of construction” to include “clearing of land, excavation, or other substantial action that would adversely affect the environment of the site.” *Id.* §§ 30.4, 40.4, 70.4. As is explained in the SER accompanying the staff’s March 17, 2010 letter granting the AES exemption request, see Exh. NRC000082 encl. 1, at 1-2 (Letter from Daniel H. Dorman, Director, FCSS, NMSS, to George Harper, Licensing Manager, AES (Mar. 17, 2010)) [hereinafter Staff Construction Exemption Approval], notwithstanding the existing regulatory language in Parts 30, 40, and 70, a recent change to the definition of “construction” in the context of power reactor licensing under 10 C.F.R. Parts 50 and 52 has established that a variety of activities considered “construction” under the definitions that still govern nuclear materials facilities, including the type of site clearing/grading and building that AES wishes to undertake prior to the completion of the staff’s environmental review of its EREF application,²³ would now be considered “preconstruction” activities that are allowed to be undertaken at reactor sites without any prior NRC authorization. What the staff is

²³ Under 10 C.F.R. § 50.10(a)(2) activities that are no longer considered “construction” include clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas; erection of fences and other access control measures; excavation; erection of support buildings (such as, construction equipment storage sheds, warehouses and shop facilities, utilities, concrete mixing plants, docking and unloading facilities; and office buildings) for use in the construction of the facility; building of service facilities such as paved roads, parking lots, railroad spurs, exterior utility and lighting systems, potable water systems, sanitary sewerage treatment facilities; and transmission lines. See Staff Construction Exemption Approval encl. 1, at 2.

permitting with this exemption is the extension of this reactor regime to materials facilities, including the EREF and the General Electric (GE)-Hitachi (GEH) laser enrichment facility.²⁴

4 .82 Two things are of note relative to this exemption. First, the Commission has published a proposed rule that would revise sections 30.33(a)(5), 40.32(e), and 70.23(a), and the definition sections associated with those provisions, to permit the type of preconstruction activities that are allowed under Part 50 and the exemption granted to AES. See Licenses, Certifications, and Approvals for Material Licensees, 75 Fed. Reg. 43,865, 43,872-75 (July 27, 2010). Relying on the agency's recent legal interpretation that it lacks authority under the AEA and NEPA to regulate "preconstruction" activities, see id. at 43,867, if adopted this proposed rule would revise the existing definition of "commencement of construction" in Parts 30, 40, and 70 to conform these provisions to the Part 50 standard. In addition, as was noted in the Vogtle ESP proceeding, see Vogtle ESP, LBP-09-19, 70 NRC at 503-04, in contrast to the regulatory scheme that permits certain "construction" activities to be undertaken at a reactor site pursuant to a limited work authorization so long as a site redress plan is submitted, see 10 C.F.R. § 50.10(d), (g), there is no agency requirement that an applicant submit a redress plan relative to preconstruction activities nor, absent state or local requirements, take any remediation action regarding preconstruction activities if it decides not to complete the project or is denied agency authorization to construct and operate the facility.

4 .84 To be sure, consistent with the representations made by the staff in its exemption grant and during the evidentiary hearing, the environmental impacts of preconstruction activities have been assessed as part of the final EIS for this proceeding, see 1 Office of Federal and

²⁴ A similar request to the staff for the GEH Global Laser Enrichment facility was approved by the staff in May 2009. See Letter from Daniel H. Dorman, Director, FCSS, NMSS, to Albert E. Kennedy, Licensing Manager, GEH (May 8, 2009) (ADAMS Accession No. ML083519647).

State Materials and Environmental Management Programs, NRC, [EIS] for the Proposed [EREF] in Bonneville County, Idaho, NUREG-1945, at 4-2 to -111 (Feb. 2011) (ADAMS Accession Nos. ML11014A005), and, as such, are subject to Board scrutiny in the context of the NEPA/environmental-related portion of this proceeding. At the same time, given that our authority is to conduct a sufficiency review of the staff's actions, and in light of the current Commission-endorsed regulatory approach to power reactor preconstruction activities and the pending agency rulemaking to apply that approach to materials facilities like the EREF, we have no compelling basis for concluding that the grant of this conforming exemption to permit certain defined preconstruction activities at the EREF was inappropriate.

4 .83 Accordingly, and as is the case with the various other license conditions, exemption requests, and the "special authorization" discussed above, on the basis of the evidentiary record before us, we conclude the staff's action adopting this exemption is adequately supported. We note, however, that our conclusions regarding the sufficiency of the staff's review are contingent on any final license issued to AES actually containing the conditions/exemptions/special authorizations that we have described above.

4. Commitment Followup and Tracking

a. Introduction

4 .84 As the Board noted in its initial publicly-available safety question 2, AES has made a number of commitments to the staff in the course of its SAR, and the associated ISAS, regarding future actions AES will take. Likewise, AES has made a significant number of analysis assumptions about such items as future geometric arrangements, operational procedures, and in-place safety systems that cannot be verified in the near term. See Board Initial Publicly-Available Safety Questions attach. A, at 1. Tracking and verifying that these items, as well as the license conditions discussed in section IV.A.3 above, are being properly

implemented is an important aspect of the agency's responsibility for protecting the public health and safety. To obtain a better understanding of how the staff intended to fulfill this obligation relative to the AES application, the Board requested that as part of the January 2011 evidentiary hearing the parties outline the full scope of this commitment followup/tracking process, including the process for ensuring license conditions are satisfied. The parties' presentation also was to employ examples from the NEF commitment followup/tracking process, as appropriate, to illustrate how the parties anticipate the process will work for the EREF. The Board requested that the parties, in particular, describe:

- a. Management structure and responsibilities under the process;
- b. Approximate number of individuals engaged in the effort;
- c. Planning for the process;
- d. Requirements and training for inspectors relative to the process;
- e. Estimated time schedule for completing the process, particularly as compared to the NEF process;
- f. Coordination of the process with AES;
- g. Methodology for compiling and updating the checklist of commitments;
- h. Process for resolving disputes with AES regarding satisfactory commitment completion; and
- i. Lessons learned from the process used at the NEF.

Board Presentation Topics Order at 4.

b. Witnesses and Evidence Presented

4 .85 The lead party for this presentation was also the staff, whose presentation materials were admitted into evidence. See Exh. NRCR00120 (Staff Presentation for Topic #4, Commitment Follow-up and Tracking) [hereinafter Staff Commitment Followup/Tracking Presentation]. Testimony on behalf of the staff was provided by Deborah Seymour, while AES provided Jim McKay as a witness. See Tr. at 247-66.

i. Staff Witness

4 .86 The background and qualifications for staff witness Deborah Seymour were set forth previously in section IV.A.3.b.i supra.

ii. AES Witness

4 .87 The background and qualifications for AES witness Jim Kay were set forth previously in section IV.A.3.b.ii supra.

4 .88 Based on the respective qualifications and experience of the proffered witnesses, the Board finds each of these staff and AES witnesses qualified to testify regarding the commitment followup/tracking process associated with the EREF.

c. Regulations and Guidance Regarding Commitment Followup and Tracking

4 .89 Under sections 40.41(g) and 70.32(k) of the NRC's regulations, a uranium enrichment facility cannot be operated until the agency verifies through inspection that the facility has been constructed in accordance with the license. As a consequence, an inspection manual chapter (IMC) is developed for the facility that defines the construction inspection program (CIP) intended to (1) provide reasonable assurance that the design, construction, and implementation of IROFS will protect against natural phenomena and the consequences of potential accidents; (2) verify the QA program was adequately implemented during construction; and (3) verify that the construction of the IROFS was completed in accordance with the documents comprising the license application, including the SAR and the ISAS, and the SER. The CIP applies to all construction activities, including, design, procurement, fabrication, construction, and pre-operational testing activities. See Exh. NRC000123, at 1 (NMSS, NRC, NRC IMC 2696, LES Gas Centrifuge Facility Construction and Pre-operational Readiness Review Inspection Programs (Oct. 19, 2006)).

d. Evidentiary Findings

4 .90 Relative to the staff's CIP and the associated ORR process that will be applied to the AES facility, the CCI, which operates out of the agency's Region II office in Atlanta, Georgia, has direct responsibility for conducting those oversight activities, albeit in regular consultation with, and with assistance from, NMSS staff personnel who are responsible for the agency's AES licensing review. In implementing its CIP responsibilities relative to the EREF, CCI personnel will follow an IMC, i.e., the soon-to-be-issued IMC 2635, that is designed to provide verification of a schedule and QA program implementation for construction activities, including activities relating to IROFS construction. By way of comparison, for the LES CIP, between 2007 and 2010 the staff employed thirty-eight inspectors who logged some 5000 hours of work, although based on its LES experience the staff anticipates using forty percent fewer inspection resources to complete the EREF CIP. See Tr. at 247-52 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 3-7.

4 .91 One of the key steps in the planned inspection process is identifying program requirements with which the licensee must comply. This could include Part 70 requirements, or commitments made by the applicant in licensing basis documents such as the SAR or the ISAS. Further, in conducting a proper inspection, an individual inspector, in addition to being trained in accord with the standards in the more generic IMC 1252, see Exh. NRC000122 (NRC IMC 1252, Construction Inspector Training and Qualification Program (Dec. 7, 2009)), must ensure that he/she is familiar with the applicable requirements for the facility in his/her particular area of expertise. The identified IROFS will be a significant focus of the inspection, along with other important items that will be inspected based on sampling done in accordance with the inspection plan developed by NRC inspectors and their managers to verify implementation of the license requirements. And when the inspections are completed, the results will be

documented and the findings will be tracked. See Tr. at 252-54 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 8-9.

4 .92 In the case of the EREF, although a firm date has not been set because the license application has not been granted, the staff anticipates that inspections could start late in 2011 or early in 2012, when enrichment facility construction could begin, and continue through to the first centrifuge cascade startup in 2014. In the end, however, the duration of the construction inspections and the ORR are determined by the licensee's construction schedule, which the staff anticipates will be shorter than for the LES NEF given the lessons learned in the construction of that facility. Also, because construction schedules change, the staff anticipates periodic meetings and other communications with AES to attempt to avoid inspection activities becoming critical path items that affect facility operation. See Tr. at 255-56 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 10-11.

4 .93 In terms of compiling and tracking commitments and license conditions, any AES commitments in its SAR or other licensing documents, as well as the license conditions imposed by the staff, will be the subject of inspections to ensure those items are implemented. Further, as was noted earlier, see section IV.A.3.d supra, the approximately 100 IROFS identified for the EREF will be a focus of the inspection process, along with other important items that will be scrutinized on a sampling basis, with the results of those inspection being recorded and tracked. Likewise, the staff will record and track the results of the pre-operational ORR, which is required by a staff-imposed license condition, see section IV.A.3.d supra, and includes safety program readiness, NCS, and radiation safety reviews. Recording and tracking is done via a series of tables listing IROFS and other requirements, such as SAR commitments and license conditions, that are created by the licensee and utilized by the staff to ensure that

all items are accounted for and their completion/closeout status is known. See Tr. at 257-58 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 12-14.

4 .94 To address any disputes that arise over whether a commitment or license condition has been fulfilled, the initial staff approach is to discuss the matter with the licensee to ensure that there is a full understanding of the issue. A typical licensee response to such a communication would be to place the issue into the licensee's corrective action program and move forward to rectify the matter. The issue and the inspection findings regarding the issue and its resolution also would be recorded in an NRC inspection report. In addition, that report would document any enforcement action that might be instituted if it was determined the applicant failed to meet an enforceable NRC requirement. See Tr. at 258 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 15.

4 .95 Regarding lessons learned from the process recently used at the LES NEF to track and follow-up on applicant commitments and similar items, the value of frequent communications was a lesson learned from staff experience with the NEF, as well as with the Savannah River, South Carolina MOX fuel fabrication facility. Along this same line, as a result of its experience with the construction of these two facilities, the staff now sees the value at fuel cycle facility sites of having a construction resident inspector who can observe ongoing construction and coordinate necessary inspection activities based on the current situation. Both the LES and MOX facilities now have onsite inspectors, the former covered by an inspector on a two-month rotational assignment while the latter has two resident inspectors. Also important is having those inspectors on site as soon as possible to start looking at the construction and QA programs and identifying any problems early on before discrepancies proliferate. Finally, for this process to be successful, it is important that the licensee have a finalized, or near finalized, facility design prior to the beginning of construction. A finalized design minimizes the need to

commit additional staff resources to repeat inspections because of changes in the design and in any associated commitments. See Tr. at 259-62 (Seymour Test.); Staff Commitment Followup/Tracking Presentation at 16. AES indicated that the need for a finalized design has been reinforced in management meetings with the NRC, and before beginning construction the applicant is committed to an “as close to final design.” Tr. at 262 (Kay Test.).

4 .96 Staff experience with both the NEF and global nuclear construction generally also has highlighted the need for a robust facility QA program that is implemented by both the applicant and the facility’s contractors and vendors. A “paper” program is not sufficient. Rather, the program must be one with strong implementation, a position AES endorses and has as its objective. Also identified as a lesson learned is the necessity for the applicant’s construction organization to ensure identified issues are “rolled up” into one corrective action program, regardless of the number of different construction contractors and vendors that are involved. The AES approach to its corrective action program will be “very similar” to the staff-endorsed QA program in terms of a focus on collecting corrective action and condition reports and applying the corrective action to all entities onsite. Tr. at 263-66 (Seymour Test.), 263, 265, 266 (Kay Test.).

e. Board Conclusions Regarding Commitment Followup and Tracking

4 .97 An applicant’s commitment as part of the license review process to undertake certain actions to satisfy the staff’s technical or other safety-related concerns, and a license condition imposed by the staff to require that an applicant take certain actions deemed necessary to protect the public health and safety, are important aspects of the licensing process. Both are intended to address matters that fall outside the specific coverage of the requirements of Parts 30, 40, and 70 that implement the AEA mandate to protect the public health and safety. As a consequence, ensuring that each commitment or condition is tracked

by the staff and is the subject of appropriate followup to assure the applicant does what it committed or is required to do is a hallmark of an effective regulatory process. In this instance, based upon the evidentiary record before the Board, we conclude that the staff's tracking and followup process, as implemented in the agency's inspection and enforcement programs, reasonably support the staff's determination regarding the ability of those programs to provide the requisite public health and safety protection under the AEA.

B. Additional Items

1. Safety Topics Raised by the Board But Not Addressed at the Evidentiary Hearing

4 .98 As was noted previously, following the issuance of the staff's SER, the Board posed questions to AES and the staff in a number of areas, some of which involved non-public information. See supra note 7 and accompanying text. A number of these questions related to other portions of the applicant's SAR and/or the staff's SER that were not encompassed by the presentation topics. Below, we outline our findings relative to those matters.

a. Board Public Safety Question Topics Not Warranting Further Discussion

4 .99 Among the areas that were the subject of publicly-available Board questions but were not covered by evidentiary hearing presentation topics were (1) the significant safety-associated differences between the AES and LES applications and lessons learned from licensing the NEF that were used in reviewing the EREF application, see Board Initial Publicly-Available Safety Questions attach. A, at 1 (Public Safety Question 1); (2) adequacy of design and operating procedures to maintain product cylinder safety design limits, see id. at 2 (Public Safety Question 4); (3) preclusion of centrifuge array criticality via multiple procedure barriers, see id. (Public Safety Question 5); Board Additional Publicly-Available Safety Questions at 2 (Supplement to Public Safety Question 5); (4) creation of RD relative to AES facility and need for implementation of Pentapartite Agreement as prerequisite to AES license,

see Board Initial Publicly-Available Safety Questions attach. A, at 3 (Public Safety Question 6); (5) insurance coverage of hazardous chemicals produced from licensed materials, see id. (Public Safety Question 7); Board Additional Publicly-Available Safety Questions at 3 (Supplement to Public Safety Question 7); (6) evaluation of feed material to ensure noncontamination, see Board Initial Publicly-Available Safety Questions attach. A, at 3 (Public Safety Question 8); Board Additional Publicly-Available Safety Questions at 3 (Supplement to Public Safety Question 8); (7) completion of site liquefaction and settlement studies as licensing prerequisites and staff SER hydrology analysis, see Board Initial Publicly-Available Safety Questions attach. A, at 4 (Public Safety Questions 12 and 13); (8) independence of Quality Assurance, Environmental Health Safety and Licensing, Safety, Security and Emergency Preparedness, and Safeguards Managers and incident investigation teams, see id. at 5 (Public Safety Question 16); (9) independence of Radiation Protection/Chemistry Manager and precedence of authority between these managers in an accident situation, see id. (Public Safety Question 17); Board Additional Publicly-Available Safety Questions at 3 (Supplement to Public Safety Question 17); (10) implementation of as low as reasonably achievable (ALARA) principle, see Board Initial Publicly-Available Safety Questions attach. A, at 6 (Public Safety Question 18); (11) visual inspection of fuel tail cylinders, id. (Public Safety Question 19); (12) use of proposed Hobbs, New Mexico deconversion facility for processing DU from EREF, see id. (Public Safety Question 20); (13) staffing of NRC QA program certification audit teams, see id. at 7 (Public Safety Question 22); (14) AES guidance for classifying occurrences as abnormal for purpose of conducting incident investigations, see id. (Public Safety Question 23); (15) QA Manager's criteria for assessing timeliness of corrective actions and ordering work stoppage, see id. (Public Safety Question 24); (16) differences between original NUREG-1520 and its revision 1,

see id. (Public Safety Question 25); and (17) classification of SAR safety appendices as Official Use Only (OUO) information (Public Safety Question 27) .

4 .100 The Board concludes that the staff's and the applicant's written responses to these questions, see supra note 8 and accompanying text, adequately addressed the Board's concerns in those areas.²⁵ Accordingly, we consider these AEA-related safety issues resolved for this proceeding. See Clinton ESP, CLI-06-20, 64 NRC at 21-22.

b. Board Public Safety Question Topics Warranting Additional Discussion

4 .101 In addition to the subjects outlined in section IV.B.1.a above that were the subject of Board questions, there were several other areas that were the subjects of Board questions and party answers that were not covered by the evidentiary hearing presentation topics, but which merit some additional discussion. These include the potential threats to safety posed by the eruption of basaltic lavas and wildfires in the vicinity of the proposed site and the qualifications of the EREF's NCS manager.

i. Volcanic Hazards

4 .102 Because the Eastern Snake River Plain (ESRP) physiographic province on which the EREF is to be located has been volcanically active during the last 17 million years, the applicant developed a probabilistic volcanic hazard analysis (PVHA) for the proposed site. See SER at 1-31. The study concluded that the annual probability that a lava flow would impact a future facility is 5×10^{-6} , equivalent to a 200,000-year interval between lava inundations. See id. at 1-33. The NRC staff reviewed the analysis and found it acceptable. See id. In its initial set of questions, the Board asked the parties to provide additional information to clarify and

²⁵ The Board also finds, based on the resumes, CVs, and SPQs admitted as part in the evidentiary record, that the various individuals proffered by AES and the staff to answer these questions have established their qualifications to respond to the questions.

explain the methods used to derive the PVHA.²⁶ See Board Initial Publicly-Available Safety Questions attach. A, at 4 (Public Safety Question 11).

4 .103 The PVHA developed by AES for the EREF site is based on methods and data used for recent volcanic hazards assessments of Idaho National Laboratory (INL) facilities. See SER at 1-33. Parameters used for calculating the probability that a lava flow will inundate a particular site are (a) the recurrence interval for eruptions within the appropriate volcanic zone; (b) the topographic setting of the site; (c) the lengths and areas of basalt lava flows from the region of interest during the recent geologic past; and (d) the distance between the site and the potential vents of future lava flows. Because the site of the proposed EREF is located within a 579-square mile region of volcanic vents known as the axial volcanic zone (AVZ), all the probability calculations in the applicant's PVHA use an event recurrence of 6.2×10^{-5}

²⁶ In addition to its question about the substance of the AES volcanic hazards analysis, the Board asked the parties for an explanation/justification as to why the SAR and SER appendices containing, respectively, the AES ISAS and the staff's analysis of that summary were being treated as nonpublic information as they relate to accident sequences associated with natural phenomena such as wildfires and volcanoes. See Board Initial Publicly-Available Safety Questions attach. A, at 7 (Public Safety Question 27). In response, the staff indicated that in accord with NRC RIS 2005-31, "[i]nformation related to accident sequences is withheld whether the sequences are initiated by natural hazards, process hazards, or failure of controls" and, as such, the information appearing in the ISAS and the staff's SER analysis of that summary would be deemed to contain Sensitive Unclassified Non-Safeguards Information (SUNSI) and so was properly withheld from public dissemination. See Staff Response to Initial Publicly-Available Board Safety Questions at 36 (citing Exh. NRC000086 (NMSS, NRC, Control of Security-Related [SUNSI] Handled by Individuals, Firms, and Entities Subject to NRC Regulation of the Use of Source, Byproduct, and Special Nuclear Material, NRC RIS 2005-31, app. 1 (Dec. 22, 2005))). To whatever degree this withholding justification survives the recently-issued Executive Order regarding controlled unclassified information, see Exec. Order No. 13,556, 75 Fed. Reg. 68,675 (Nov. 9, 2010), and/or the recent Supreme Court decision in Milner v. Dep't of the Navy, 131 S. Ct. 1259 (2011), it still appears to be overly broad, as is evidenced by the substantial volume of material that was provided, to its credit, by AES for the public record in this proceeding in response to the Board's volcanic hazard inquiry. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 6-17. Of course, short of intervening in this proceeding and requesting the material under a protective order in order to formulate contentions or filing a Freedom of Information Act (FOIA) request, members of the public have no way of obtaining this information.

eruptions per year (approximately one eruption every 16,000 years) that was previously estimated for this area by the INL-related studies. The probability that a future lava flow will cover the proposed site was determined by multiplying this value times the probabilities for the additional processes or conditions necessary to produce the result of interest. See id.; Exh. NRC000067, at D-5 to -6 ([EREF ISAS] app. D (rev. 2 Apr. 30, 2010)) [hereinafter AES PVHA];²⁷ Exh. AES000049, at 470 (William R. Hackett et al., Volcanic Hazards of the [INL], Southeast Idaho, in Tectonic and Magmatic Evolution of the Snake River Plain Volcanic Province: 30 Idaho Geological Surv. Bull. 461 (Bill Bonnicksen et al. eds., 2002)) [hereinafter INL Volcanic Hazards Article].

4 .104 The applicant used two different approaches to calculate this probability. Analysis one took into account the topographic setting and calculated the probability that an eruption would take place within the shallow basin in which the proposed EREF site is located as well as the probability that an eruption within the basin would inundate the EREF site. Analysis two did not account for topography and simply used the average size of lava flows on the INL site to calculate what percentage of the total area of the AVZ would be inundated by a future eruption at a random location. The value of 5×10^{-6} cited by the applicant and accepted by the NRC staff is the average of these two analyses. See SER at 1-33; AES PVHA at D-5 to -6.

4 .105 Part (a) of the Board's public safety question 11 focused on the AES estimate for the recurrence interval of volcanic eruptions in the vicinity of the proposed site, which was calculated using data from field mapping, radiometric dating, and paleomagnetic

²⁷ In preparing this analysis regarding the PVHA, the Board has incorporated some material from the discussion in the AES PVHA that it is apparent, based on the material presented by AES in response to the Board's safety question 11, is not considered to be nonpublic information.

measurements. The PVHA used a spatially and temporally homogeneous model for volcanism in the AVZ, meaning that future eruptions are equally likely to take place at any location within the volcanic zone, and the rate of volcanic activity is neither increasing nor decreasing through time. See INL Volcanic Hazards Article at 469, 472. The Board noted, however, that the most recent eruptions in the AVZ have been from vents located only five miles from the EREF site and asked why future eruptions were not more likely to occur in this area than in other parts of the AVZ. See Board Initial Publicly-Available Safety Questions attach. A, at 4.

4 .106 AES expert consultant Dr. William R. Hackett provided a detailed answer in the AES response to this question.²⁸ Dr. Hackett pointed out three factors that argue against the premise that the area close to the EREF site is at greater risk for an eruption than other parts of the AVZ: (1) an analysis of the distribution of the youngest lava fields in the AVZ (<13.3 thousand years old) demonstrates that the proportion of young volcanoes to older volcanoes is no greater in the vicinity of the EREF than it is in the AVZ generally; (2) examination of the relevant geologic mapping of the area demonstrates the homogeneous spatial distribution of all volcanic vents along the length of the AVZ, indicating that the region close to the EREF site has been no more volcanically active than at any other part of the AVZ; and (3) basaltic volcanoes of the eastern SNRP are almost entirely monogenetic, meaning that they produce lavas over short periods of time and do not reawaken after long periods of dormancy. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp.

²⁸ Dr. Hackett, who has a B.A. in geology from Franklin and Marshall College, an M.S. in earth science from Case Western Reserve University, and a Ph.D. in geology from Victoria University, Wellington, New Zealand, has been involved in a variety of professional activities including conducting the volcanic hazard analysis for several facilities at the INL and being a member of the expert panel that developed the PVHA for the proposed high-level nuclear waste repository at Yucca Mountain, Nevada. See Exh. AES000010, at 1-2 (Resume of William R. Hackett). Based on his qualifications and experience, the Board finds Dr. Hackett qualified to provide expert answers regarding the volcanic hazards associated with the EREF.

8-9. Given these three factors, Dr. Hackett asserted, the location of a young volcanic field near the EREF site is not a good indicator that future eruptions also will take place at this location. In addressing this question, Dr. Hackett also pointed out that although the distribution of volcanic vents along the length of the AVZ is homogeneous, there is a tendency for vents to be more abundant on the southern flank of a broad central ridge that runs along the axis of the volcanic zone. As a consequence, according to Dr. Hackett, lavas produced by future eruptions are more likely to flow southward, away from this topographic crest and from the EREF site. See id. at unnumbered pp. 7-9.

4 .107 The Board's question 11(b) focused on the study by Champion and others that was cited and discussed in ISAS appendix D, in which a time interval for lava inundations in the southeastern part of the INL was identified that is substantially shorter than the 200,000-year interval put forth in the EREF PVHA. See Exh. AES000047, at 189-91 (Duane E. Champion et al., Accumulation and Subsidence of Late Pleistocene Basaltic Lava Flows of the [ESRP], Idaho, in Geology, Hydrogeology, and Environmental Remediation: [INL], [ESRP], Idaho: 353 Geological Soc'y of Am. Special Papers 175 (P.K. Link & L.L. Link eds., 2002)). The Board questioned why the two estimates AES deemed credible are so different and why the longer estimate is appropriately conservative. See Licensing Board Initial Publicly-Available Safety Questions attach. A, at 4.

4 .108 In response to Board question 11(b), Dr. Hackett explained how the method used by the Champion study for determining the average time intervals between lava inundations differed from the one used in the INL studies relied upon in putting together the PVHA, and further maintained that the PVHA may provide a more robust assessment of the potential volcanic hazard at the EREF site. As noted above, the INL method utilized for the PVHA is based on an analysis of geologic maps showing the locations and extent of volcanic vents and

lava flows and utilizes a homogeneous model for volcanism in the AVZ to estimate the probability that a future eruption will inundate the EREF site. In contrast, the Champion study was based on rock cores from about twenty boreholes in the southern part of the INL and calculated inundation recurrences by radiometrically dating selected samples in each core and dividing the total time interval represented by the core by the number of individual lava flows intersected in that borehole. Dr. Hackett also indicated that an important distinction between the Champion and PVHA methods lies in their definition of a "volcanic event." In the PVHA analysis a single volcanic event is defined as a series of related (co-magmatic) eruptions that take place over a time period of several months to several years. According to Dr. Hackett, under the Champion method, a "volcanic event" is indicated by a lava flow or group of closely related lava flows that covered a very specific site. Dr. Hackett noted, however, that multiple boreholes and detailed measurements of core samples are not available within or near the EREF site. As a consequence, according to Dr. Hackett, the PVHA approach has an advantage over the borehole method of Champion because lava flows sampled in the INL cores present a record of eruptions from a number of source zones, whereas the PVHA focuses specifically on an extensive set of data from the AVZ, the region that is most relevant to the EREF site. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 10-13.

4 .109 In its answer to Board safety questions 11(a) and (b), AES also included two additional analyses of hypothetical scenarios in which the set of parameters differed from the analyses in the docketed PVHA. Analysis three used eruption recurrence intervals and lava flow statistics from only the most recent volcanic events in the AVZ (<13.3 thousand years). This resulted in a shorter event recurrence interval of 2.3×10^{-4} per year that, in turn, raised the probability for the inundation of a random site to 3×10^{-5} per year, equivalent to an interval between inundations of 33,300 years. Dr. Hackett, however, emphasized that this

scenario is not a credible scheme for future lava inundation because it relies on only three eruptive events rather than the entire history of events within the AVZ. See id. at unnumbered pp. 9-10. According to Dr. Hackett, there was no significant justification for giving greater weight to the most recent eruptions relative to all other events in the AVZ over the past 750,000 years, and he noted that if only events during the last 200,000 years are considered, event recurrence is substantially longer than the 16,000-year interval uniformly applied to the AVZ in the homogeneous temporal model used in the PVHA. See id. at unnumbered pp. 13-14.

4 .110 In contrast, analysis four used the event recurrence interval calculated for all AVZ eruptive episodes, but increased the area covered by the resulting lava flows to that of an average-sized ESRP shield volcano, rather than using the smaller value based on lava flow statistics from the INL. The probability for inundation at a random site in the AVS in this scenario is 8.7×10^{-6} per year (115,000-year inundation recurrence). Given that the defensible and credible scenarios calculated in the PVHA and in analysis four all result in inundation recurrences of 100,000 years or longer, Dr. Hackett asserted that an inundation recurrence of 10^{-5} per year or less was appropriate, which is consistent with the PVHA result. See id. at unnumbered pp. 14-16.

4 .111 As is reflected in the discussion above, the PVHA performed for the AES license application utilizes the considerable store of data available for the ESRP region and follows well-established PVHA development procedures. The process utilized for assessing the volcanic hazard at the EREF thus appears to be on solid footing. That being said, it also is apparent from that analysis that there is a potential volcanic hazard at that site, which raises the question whether the probability of such an event is sufficiently low to be considered "highly unlikely" as that term is used in 10 C.F.R. § 70.61, which the staff defines as an event having a probability of 10^{-5} per event, per year, or less, see Revised Staff Fuel Cycle SRP at 3-31. In

that regard, as was described above, lava flow hazard, which is the most likely type of volcanic hazard at the site, has a probability that falls at or below the level defined by the staff as highly unlikely.

4 .112 Additionally, we think it worth noting that this volcanic hazard differs from seismic or weather hazards. Because there is no reasonable likelihood a facility can survive being inundated by lava, such a possibility cannot be planned for in the design of the facility. On the other hand, as AES describes in its answer to Board question 11(c) regarding possible minimization preparations and procedures, since lava generally flows slowly, a facility would have a warning of from days to months and could attempt to mitigate the hazard prior to inundation by constructing diversions, evacuating personnel, and possibly removing hazardous materials, an opportunity not generally provided by earthquakes and floods. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 16-17.

4 .113 Taking all this into account, the Board concludes that the written response by AES to Board questions 11(a), 11(b), and 11(c) adequately addressed our concerns in this area and we consider these issues to be resolved.²⁹ See Clinton ESP, CLI-06-20, 64 NRC at 21-22.

²⁹ The Board did not pose any questions to the parties regarding the matter of seismic safety, another potentially relevant geologic phenomenon relative to the EREF. Nonetheless, based on our review of the AES ISAS and the staff's SER, we note that both emphasize that nearly all the significant historic earthquakes in the region of the proposed EREF, including the 1983 Borah Peak 6.8 momentum magnitude (Mw) earthquake and the 1959 Hebgen Lake 7.3 Mw earthquake, have been related to movement along normal faults located outside the ESRP in the surrounding Basin and Range and Yellowstone provinces, with few earthquakes having occurred within the ESRP itself. See SER at 1-26 to -27. Moreover, the AES probabilistic seismic hazard assessment (PSHA) for the EREF site used models for ground motion attenuation that included specific predictions for normal faults and were applicable to bedrock conditions at the site. See id. at 1-28. The staff concluded that the AES PSHA provided "an adequate approach to develop seismic inputs for design and performance consideration in the application and thereby meets the regulatory requirements in 10 CFR 70.65(b)(1)." Id. at 1-30. We find no basis to question this conclusion. From our perspective, the AES seismic hazard analysis appears to be highly site-specific, reflecting consideration not only of the location and magnitude of historic earthquakes, but also the nature of the bedrock at the EREF and the style
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ii. Wildfires

4 .114 In its public safety question three, the Board noted that AES dismissed off-site wildland fires as a non-credible threat to the facility and, therefore, did not evaluate this item as a potential safety hazard. The Board asked the parties to cite the studies on which this assertion was based and discuss what impact an event similar to the July 2010 INL site range fire could have on the proposed EREF. See Board Initial Publicly-Available Safety Questions attach. A, at 2 (Public Safety Question 3).

4 .115 In its response to the first part of this question, the staff asserted an NEF analysis showed that burning diesel fuel would be incapable of rupturing UF₆ cylinders under conditions likely to exist in an accidental fire. See Staff Response to Initial Publicly-Available Safety Questions at 9-10. AES cited its own analysis of a similar scenario that concluded that a thirty-minute fire in a pool of hydrocarbon fuel one meter from stored cylinders would not exceed the acceptance criteria for cylinder rupture. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 2-3. Both AES and the staff emphasized that in light of these analyses, wildfires would not pose a credible hazard because the heat in cylinder storage areas resulting from rangeland fire would be much less than the heat produced by the burning fuel in the accident scenarios. They went on to note that cylinder storage and handling areas would be located at least thirty meters from any natural vegetation capable of supporting wildfire, further reducing the credibility of this hazard. See Staff Response to Initial Publicly-Available Safety Questions at 9-10; AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 3-4.

²⁹(...continued)

of faulting in the region surrounding the ESRP (i.e., normal faults associated with extensional tectonic environments), which is different from the type of faulting that occurs in a subduction environment such as produced the recent 9.0 Mw earthquake off the eastern coast of Japan.

4 .116 Also, in response to the portion of the Board's question referring to the July 2010 INL wildfire, AES stated that structures, systems, or components credited as IROFS would not be affected if a comparable event were to occur on the site of the proposed EREF. Although acknowledging the July 2010 wildfire caused power outages in the area, AES noted that IROFS are designed to "fail-safe" during off-site power failures.³⁰ AES also stated that smoke and blowing dust, which accompanied the 2010 wildfire, would not impact facility safety because exterior operations and/or building ventilation systems can be shutdown without affecting IROFS. See AES Response to Initial Publicly-Available Safety Questions at unnumbered pp. 3-4.

4 .117 The Board concludes that its questions regarding the potential hazards posed by wildfire have been adequately addressed by these party responses.³¹

³⁰ The AES ISA process included consideration of the consequences of incidents that might result in a loss of offsite power to the EREF. See AES SAR at 3.1-4. In addition to IROFS being "designed such that the safety function is maintained or the feature fails-safe," id. at 3.3-14, all facility critical electrical loads are fed from uninterruptible power supplies (UPS), which receive power input from two incoming power sources, four diesel powered electric generators and stationary batteries, see id. at 7.3-3. Because all power inputs to the UPS are designed to transfer automatically to another source if the first source fails, AES maintains loads connected to the UPS should be unaffected by offsite power and standby generator failure. See id. at 7.3-3,

³¹ Relative to the general issue of fire protection, the Board notes that on January 27 and March 23, 2011, it received 10 C.F.R. § 2.315(a) limited appearance statements expressing concerns about, among other things, the adequacy of fire protection systems in AES process buildings. See Letter from Roger Turner to NRC at 2-3 (Jan. 27, 2011) (ADAMS Accession No. ML110310657) [hereinafter Turner Letter]; Letter from Beatrice Brailsford, Nuclear Program Director, Snake River Alliance, to NRC Office of the Secretary and Board Chair at 2 (Mar. 23, 2011) (ADAMS Accession No. ML110820826) [hereinafter Brailsford Letter]. Although section 2.315(a) imposes no duty on the Board to respond to these statements as litigable concerns, the Board nonetheless notes that while automatic fire suppression sprinkler systems are provided throughout much of the facility, moderator control restrictions prevent some areas from being covered by sprinklers. See SER at 7-11 to -13. For instance, the staff's SER indicates that the separations building will have automatic sprinkler systems in the process service corridors, but not in the cascade halls. For those areas without sprinkler systems to enhance criticality safety, fire safety is addressed by the combination of fire-resistant

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iii. Adequacy of Qualifications of Nuclear Criticality Safety Manager

4 .118 Among the public questions posed by the Board was an inquiry concerning the adequacy of the AES requirements for the position of NCS Manager. See Board Initial Publicly-Available Safety Questions attach. A, at 5 (Public Safety Question 15). In response to the Board's query as to why the qualifications of a B.S. degree with four years of nuclear experience and one year of direct experience in NCS administration are sufficient for the NCS Manager, applicant AES responded that

[t]he qualifications establish the experience level necessary for managing a technical program and ensuring compliance with applicable procedures, prioritizing work assignments, assigning qualified personnel to appropriate tasks, and undertaking other management activities. The [NCS] Manager is responsible for performing oversight of the criticality safety program but would not actually perform a [NCS] evaluation or serve as the independent reviewer of such an evaluation unless the manager had completed the specific training program for a Criticality Safety Engineer (as described in the SAR Section 2.2.4.AA) (Exh. AES000037).

AES Response to Initial Publicly-Available Safety Questions at unnumbered p. 18. The Board found this response unsatisfactory because it seemed to state that the NCS manager overseeing the criticality safety program might not have either the education or training necessary to understand the basics of nuclear criticality given it is possible to attain a B.S. degree without any exposure whatsoever to the concept of nuclear criticality, the principles of neutron transport, or the numerical tools used to calculate the degree of criticality of multiple source arrays. Indeed, education in these areas is limited to schools offering nuclear

³¹(...continued)

construction materials, fire barriers, alarm systems, and control of transient combustibles. See id. at 7-10 to -11. We note also that the SER emphasizes that UF₆ itself is not flammable and does not disassociate to flammable constituents under the operating conditions at the facility. See SER at 7-14.

engineering options, usually at the M.S. degree level or beyond. Similarly, four years of nuclear experience could be obtained without gaining experience in nuclear criticality determinations.

4 .119 As a consequence, the Board posed an additional question. Noting that a typical individual with no more than a B.S. degree and four years of nuclear experience most likely has no applicable education or experience with NCS concepts or practice, thus leaving only one year of direct experience in NCS administration to qualify to be a candidate to manage NCS at the EREF, the Board asked why was more experience as an NCS engineer not required. In posing this question, the Board also referenced the staff's response to this question indicating that both LES and Babcock and Wilcox (relative to its Lynchburg, Virginia nuclear fuel fabrication facility) apparently believe additional experience is necessary, and stated "[p]ut another way, how does a manager know the scope of work the [NCS] team is supposed to do, let alone know how to do it correctly, without prior experience in performing similar activities?" Board Additional Publicly-Available Safety Questions at 3 (Supplement to Public Safety Question 15) (citing Staff Response to Initial Publicly-Available Safety Questions at 23-24).

4 .120 In its response to this supplemental inquiry, AES stated:

The requirements for training and experience of the EREF [NCS] Manager are based on the recognition that this technical manager would manage the activities of qualified Criticality Safety Engineers. To manage these activities, AES does require one year direct experience in the administration of NCS evaluations and analyses. However, the [NCS] Manager would not be permitted to perform or serve as technical reviewer for a criticality safety evaluation or calculation without also completing the training and qualifications for a Criticality Safety Engineer that are described in the EREF SAR.

The EREF SAR, Section 2.2.4.1, meets the requirements of NUREG 1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," Revision 0, Section 11.4.3.3, Training and Qualifications, which specifies the commitments that should be included in a license application with respect to training and qualifications of key managers in the facility staff as shown below:

The application should contain such commitments regarding personnel qualification for managers, supervisors, designers, technical staff, construction personnel, facility operators, technicians, maintenance personnel, and other staff required to meet NRC regulations:

- Managers should have a minimum of a B.S. or B.A. or the equivalent. Each manager should have either management experience or technical experience in facilities similar to the facility identified in the application.

The NRC Staff's response to Question 15 also tabulated the education and experience commitments associated with the [NCS] Manager made in licensing documents by a number of other comparable fuel cycle facilities. We understand that the information provided by the NRC Staff was for information only. The acceptability of commitments made in the EREF license application is based on meeting the requirements of NUREG 1520 and not on consistency with other fuel cycle facilities. Nevertheless, AES is consistent with LES in requiring one year direct experience in the administration of NCS evaluations and analyses.

AES Response to Additional Publicly-Available Safety Questions at unnumbered pages 3-4.

4 .121 Neither of these AES responses allays the Board's concerns about the competency of an individual meeting the stated AES minimum job requirements to manage nuclear criticality, even at a facility like the EREF that handles relatively low-level uranium enrichments.³² The argument made by the applicant that "the [NCS] Manager would not be permitted to perform or serve as technical reviewer for a criticality safety evaluation or calculation without also completing the training and qualifications for a Criticality Safety

³² To be sure, the five-percent uranium enrichments created at the EREF are well below those that are generated at, for instance, the Babcock and Wilcox fuel fabrication facility in Lynchburg, Virginia. Nonetheless, the particulate nature of the material utilized at the EREF creates significant criticality challenges that must be understood and carefully considered when establishing or making changes in the procedures associated with the EREF enrichment process.

Engineer” neither addresses the issue of how the prospective NCS manager has gained a sufficient understanding of NCS principles and practices to manage the individuals doing such crucial work within the EREF,³³ nor accounts for the knowledge needed by an NCS manager to carry out the important QA duties associated with that position, see AES SAR at 11.4-43 (NCS manager must approve changes to safety procedures).³⁴

In the opinion of the Board, given the critical nature of the job being performed, the training and qualifications for a NCS engineer or the equivalent should be a job requirement for those managing the work of individuals having such qualifications. As a consequence, we will add the following condition to the AES license.³⁵

³³ One obvious way to get such “management” experience would be as a supervisor. In that regard, however, the staff’s SRP specifies that “[s]upervisors should have at least the qualifications required of personnel being supervised.” Revised Staff Fuel Cycle SRP at 11-10. Thus, it appears that, consistent with NUREG-1520, to become a supervisor of NCS engineers, and thereby gain the experience to become a manager of NCS engineers, would require the qualifications of an NCS engineer.

³⁴ Regarding such changes, the SAR declares:

Should a change to the facility require a [NCS] evaluation or analysis, an individual who, as a minimum, possesses the equivalent qualifications of the Criticality Safety Engineer shall perform the evaluation or analysis. In addition, this individual shall have at least two years of experience performing criticality safety analyses and implementing criticality safety programs. An independent review of the evaluation or analysis shall be performed by a qualified Criticality Safety Engineer.

AES SAR at 2.2-11. Although the SAR allows for such procedural change QA approvals to be done by the NCS Manager “or designee,” id. at 11.4-43, in our estimation this delegation provision does not justify scaling back the qualifications of the NCS Manager position.

³⁵ Although, as AES observed, its proposed NCS manager minimum qualifications are the same as those that apply for the LES facility, we do not consider that conclusive relative to the EREF given, as the staff notes in its answer to public safety question 15, see Staff Response to Initial Publicly-Available Safety Questions at 23 n.*, the duties associated with the LES position are not necessarily the same. Nonetheless, the staff may wish to consider the degree to which the qualifications of the NEF NCS manager should now be at the same level as
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Section 2.2.4.I of the AES SAR is amended to substitute the following:

I. Nuclear Criticality Safety Manager

The Nuclear Criticality Safety Manager shall have, as a minimum, a bachelor's degree (or equivalent) in physical science or engineering, as well as two year's experience as a nuclear criticality safety engineer at the EREF or three year's experience as a nuclear criticality safety engineer at another nuclear facility.

b. Board Nonpublic Safety Question Topics

4 .122 In addition to reviewing the publicly available information regarding the application and the staff's SER review, as is noted in section II above, the Board received and reviewed information submitted by the applicant that was marked as OOU or classified material. Following issuance of the staff's SER, the Board posed questions to AES and the staff in a number of areas, some of which involved this nonpublic information. See supra note 7 and accompanying text. Those questions related to portions of the applicant's SAR and/or the staff's SER that were not encompassed by the four hearing presentation topics, including (1) methods used for ensuring that significant accident sequences have been analyzed, see Board Initial Nonpublicly-Available Safety Questions attach. A, at 1 (Nonpublic Safety Question 1); (2) calculating average enrichment for UF₆ dump; see id. (Nonpublic Safety Question 2); Board Additional Nonpublicly-Available Safety Question at 3 (Supplement to Nonpublic Safety Question 2); (3) frequency of the drills and exercises conducted to demonstrate EP effectiveness, see Board Initial Nonpublicly-Available Safety Questions attach. A, at 1 (Nonpublic Safety Question 3); (4) thirty-minute release assumption; see id. at 2 (Nonpublic

³⁵(...continued)
the EREF criticality manager as set forth in the Board-imposed EREF license condition.

Safety Question 4); (5) "light-work" breathing rate assumption; see id. (Nonpublic Safety Question 5); (6) population distribution assumption, see id. (Nonpublic Safety Question 6); and (7) consequences of uranium accumulation in degreaser water collection tank, see id. (Nonpublic Safety Question 7).

4 .123 In nonpublicly-available Appendix A to this decision,³⁶ the Board provides its findings relative to those matters, concluding that the staff's and applicant's written responses to the questions, see supra note 8 and accompanying text, adequately addressed the Board's concerns in those areas. Accordingly, we consider these AEA-related safety issues resolved for this proceeding. See Clinton ESP, CLI-06-20, 64 NRC at 21-22.

2. Safety Matters Not Raised by the Board

4 .124 Finally, there are portions of the staff's SER, such as that dealing with AES's QA program, about which the Board did not make a specific inquiry in this proceeding.³⁷ We found

³⁶ Because of the purported nonpublic nature of the information upon which it was based, Appendix A to this decision is only being served upon AES and the staff, as the parties to this proceeding, via the protective order file component of the agency's E-Filing System, as well as being placed in the nonpublic portion of the official docket of this proceeding. We are, however, requesting that AES and the staff review the appendix within seven days of the date of issuance of this decision and provide the Board with a joint report that (1) indicates whether all, or any portion, of the appendix can be publicly-released; and (2) in the event portions of the appendix can be made publicly-available, indicates what redactions are appropriate. See South Texas Project Nuclear Operating Co. (South Texas Project, Units 3 and 4), CLI-10-24, 72 NRC __, __ n.99 (slip op. at 25 n.99) (Sept. 29, 2010). Following receipt of that report, the Board will determine what, if any, portions of the appendix can be publicly-released and will make appropriate disclosure arrangements.

³⁷ In this regard, we note that in its proposed findings of fact relative to the safety portion of this uncontested hearing, the staff provided an outline of the significant technical findings and conclusions reached in each of its SER chapters, detailing the myriad safety determinations that support the staff's finding that construction and operation of the proposed NEF is consistent with protection of the public health and safety and the environment. See Staff Proposed Safety Findings at 8-63 (publicly-available version).

those portions to be sufficient on their face and therefore did not pursue them further.³⁸ See Clinton ESP, CLI-06-20, 64 NRC at 21-22. We consider the issues addressed in those portions of the SER to be resolved in favor of issuance of the requested Part 70 license.

V. CONCLUSION

5.1 In accordance with the Commission's directives, see Clinton ESP, CLI-05-17, 62 NRC at 34, 39; Clinton ESP, CLI-06-20, 64 NRC at 21-22, the Board conducted an independent sufficiency review of the staff findings, and probed those staff findings by focusing in detail on the AEA/safety-related issues addressed by AES and the staff in their licensing submissions. In this regard, as was noted in section IV supra, with the exception of the matters of (1) decommissioning financial assurance, aspects of which are currently before the Commission relative to a Board-certified question, see section II supra; and (2) the qualifications of the EREF NCS manager, which is the subject of a Board-imposed license condition, see section IV.B.1.b.iii supra, relative to those matters that were the subject of a series of Board public or nonpublic questions prior to the hearing, but for which the Board did not request a presentation from either the staff or AES, see section IV.B.1.a supra, the Board was satisfied with the answers provided. See Clinton ESP, CLI-06-20, 64 NRC at 21-22. Similarly, with

³⁸ The limited appearance letters to the Board also raised concerns about whether the SAR and SER (1) reflected an adequately independent analysis of the EREF, given the number of instances in which they purportedly place undue reliance on the LES SAR; and (2) provided a sufficient discussion regarding corrosion impacts to the EREF, take-off systems, and containers. See Turner Letter at 1-3; Brailsford Letter at 2. Regarding the former point, to the degree it relates to safety concerns (as opposed to environmental matters, which will be the subject of another portion of this proceeding), while AES and the staff clearly have taken into account the NEF in analyzing potential EREF safety hazards, we do not find any evidence that there has been mere "copying" without an independent examination of the issues involved. And relative to the latter assertion, as the staff's SER notes, there is an analysis of hydrogen fluoride corrosion impacts in the AES application. See SER at 6-7 to -8. So too, there was an analysis of hydrogen combustion/control issues for the facility generally. See id. at 7-15 to -16.

respect to each of the topics that were the subject of party presentations at the January 2011 evidentiary hearing (and which were described in detail in section IV.A. above), the Board concludes that the staff review was sufficient and reasonably supported in logic and fact, with the caveat that this conclusion relative to the license conditions/exemptions/special authorization discussed in section IV.B.3 above is contingent upon these conditions/exemptions/special authorization actually being incorporated into the AES license. Finally, the Board was satisfied with the staff review of topics in its SER that were not the subject of either Board questions or presentations.

5.2 In accordance with the Commission's notice of hearing for this proceeding, see 74 Fed. Reg. at 38,054 (CLI-09-15, 70 NRC at 7), having reviewed the basis for the staff's AEA/safety-related conclusions, the Board concludes that, subject to an appropriate resolution of the matter of decommissioning financial assurance, aspects of which are currently before the Commission relative to a Board-certified question, and the imposition of the license condition set forth in section IV.B.1.b.iii above regarding the qualifications of the EREF NCS manager, (1) the application and record of the proceeding contain sufficient information regarding AEA/safety-related matters to support license issuance; and (2) the staff's review of the

application has been adequate to support the findings to be made by the NMSS Director with respect to the applicable standards in 10 C.F.R. Parts 30, 40, and 70.³⁹ As a consequence, the Board further concludes that, on the basis of the foregoing factors, the issuance of a license that permits the construction and operation of the proposed EREF will not be inimical to the common defense and security or to the health and safety of the public.

6 .1 For the foregoing reasons, it is this eighth day of April 2011, ORDERED, that:

A. Any 10 C.F.R. Part 70 license that may ultimately be issued to AES for the construction and operation of the proposed EREF shall contain the condition regarding the qualifications of the NCS manager set forth in section IV.B.1.b.iii above.

B. Within seven (7) days of the date of issuance of this decision, AES and the staff shall provide the Board with a joint report that (1) indicates whether all, or any portion, of Appendix A to this decision can be publicly-released; and (2) provides a redacted version of the appendix in the event any portion can be made publicly-available. See supra note 36.

C. Pursuant to 10 C.F.R. § 2.341(a), this PID will constitute a final decision of the Commission forty (40) days from the date of issuance, i.e., on Wednesday, May 18, 2011, unless a petition for review is filed in accordance with 10 C.F.R. § 2.341(b), or the Commission directs otherwise. Any party wishing to file a petition for review on the grounds specified in section 2.341(b)(4) must do so within fifteen (15) days after service of this PID. The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before

³⁹ Issuance of a 10 C.F.R. Part 70 license authorizing the construction and operation of the proposed EREF also must abide the conclusion of the Board's review of NEPA/environmental-related matters associated with the AES application and the staff's February 2011 FEIS.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
AREVA ENRICHMENT SERVICES, LLC) DOCKET NO. 70-7015-ML
(Eagle Rock Enrichment Facility))
)

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Licensing Board "**FIRST PARTIAL INITIAL DECISION (Uncontested/Mandatory Hearing on Safety Matters) (LBP-11-11)**", dated April 8, 2011, have been served upon the following persons by Electronic Information Exchange.

U.S. Nuclear Regulatory Commission.
Atomic Safety and Licensing Board Panel
Mail Stop: T-3F23
Washington, DC 20555-0001

G. Paul Bollwerk, Chair
Administrative Judge
paul.bollwerk@nrc.gov

Kaye D. Lathrop
Administrative Judge
kaye.lathrop@nrc.gov

Craig M. White
Administrative Judge
craig.white@nrc.gov

Anthony C. Eitrem, Esq.
Chief Counsel
ace1@nrc.gov
Jonathan Eser, Law Clerk
jonathan.eser@nrc.gov

U.S. Nuclear Regulatory Commission
Office of the Secretary of the Commission
Mail Stop: O-16C1
Washington, DC 20555-0001
hearingdocket@nrc.gov

U.S. Nuclear Regulatory Commission
Office of the General Counsel
Mail Stop: O-15D21
Washington, DC 20555-0001
Christine J. Boote, Esq.
christine.boote@nrc.gov
Mauri T. Lemoncelli, Esq.
mauri.lemoncelli@nrc.gov
Carrie M. Safford, Esq.
carrie.safford@nrc.gov
Catherine Scott, Esq.
clm@nrc.gov
Marcia J. Simon, Esq.
marcia.simon@nrc.gov
OGC Mail Center
OGCMailCenter@nrc.gov

U.S. Nuclear Regulatory Commission
Office of Commission Appellate Adjudication
Mail Stop: O-16C1
Washington, DC 20555-0001
ocaamail@nrc.gov

AREVA ENRICHMENT SERVICES, LLC (Eagle Rock Enrichment Facility) – 70-7015-ML
FIRST PARTIAL INITIAL DECISION (Uncontested/Mandatory Hearing on Safety Matters)

Counsel for Applicant

Winston & Strawn, LLP
1700 K Street, N.W.
Washington, DC 20006
Rachael Miras-Wilson, Esq.
rwilson@winston.com
Carlos Sisco, Sr. Paralegal
csisco@winston.com

Winston & Strawn, LLP
101 California Street
San Francisco, CA 94111
Tyson Smith, Esq.
trsmith@winston.com

Curtiss Law
P.O. Box 153
Brookeville, MD 20833
James Curtiss, Esq.
curtisslaw@gmail.com

Applicant

AREVA Enrichment Services LLC
Eagle Rock Enrichment Facility
400 Donald Lynch Boulevard
Marlborough, MA 01752
Jim Kay, Licensing Manager
jim.kay@areva.com

[Original signed by Linda D. Lewis] _____
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 8th day of April 2011