AES RESPONSES TO SUPPLEMENTAL PUBLIC SAFETY QUESTIONS

The Licensing Board noted that all of the safety questions could be answered by both the Nuclear Regulatory Commission ("NRC") Staff and AES, although the Licensing Board explained that at least one party must respond to each question. AES and the NRC Staff have conferred regarding which party is best positioned to respond to the Licensing Board's questions. Based on those discussions, AES is providing a response to the following supplemental publicly-available questions: 5, 7, 15, and 17. Both AES and the NRC Staff are providing responses to the following supplemental publicly-available questions: 8 and 28. Below, AES repeats each question, identifies the person(s) providing a response to the question, and responds to the question. An affidavit and, if necessary, a statement of qualification for each expert is attached.

ASLB Supplemental Question 5:

> **AES should indicate whether it has quantified the probabilities involved in its probability argument and, if so, explain how it has done so.**

Response to Supplemental Question 5 (Andrews):[1]

AES has not quantified the probabilities involved in its probabilistic analysis. Instead, a qualitative probabilistic analysis was performed by AES, as presented in ISA Summary, Section 3.4.3.8.1 (Exh. AES000040). This qualitative analysis is considered sufficient based on the criteria in the ISA Summary, Section 3.1.1.3.2 (adopted from NUREG-1520), which defines non-credible events to include "process deviations for which there is a convincing argument, given physical laws, that they are not possible, or are unquestionably extremely unlikely." As a result, a quantitative analysis was not necessary.

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[1] *See* Exhibits AES000025 (Andrews Affidavit) and AES000022 (Professional Qualifications).

ASLB Supplemental Question 7:

> **AES should provide its position about whether liability insurance covers all hazardous chemicals produced from licensed materials, e.g., hydrogen fluoride (HF).**

Response to Supplemental Question 7 (Kay):[2]

The liability insurance that AREVA will obtain from American Nuclear Insurers ("ANI") will cover hazardous chemicals produced from licensed material, including hydrogen fluoride ("HF"). Coverage is based on the fact that HF would not be present at site in the absence of licensed materials (*i.e.*, UF_6).

ASLB Supplemental Question 8:

> **In response to Publicly-Available Question 8, AES indicated that section 2.3.2 of the EREF Fundamental Nuclear Material Control Plan (FNMCP) for Gaseous UF6 Sampling incorrectly states that feed material is sampled once per feed cylinder prior to feeding the material into the enrichment system to confirm feed assay and compliance with American Society for Testing and Materials (ASTM) C787. See AES Initial Publicly-Available Questions Response at 5-6. Further, AES committed to correcting this error under the AES corrective action program. How will the FNMCP be corrected? And how will AES's corrective action program ensure correction of the error?**

Response to Supplemental Question 8 (Tilden):[3]

AES has generated a Condition Report to identify and correct this error in the FNMCP. The AES corrective action process requires development of an action plan to correct issues that are identified in a condition report. In this case, the action plan is to revise the FNMCP to correct the error. The Condition Report is being tracked and will remain "open" until the corrective action is completed.

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[2] *See* Exhibits AES000027 (Kay Affidavit) and AES000012 (Professional Qualifications).

[3] *See* Exhibits AES000028 (Tilden Affidavit) and AES000015 (Professional Qualifications).

The wording in FNMCP, Section 2.3.2, Uranium Measurements (Exh. AES000039), under the heading of "Gaseous UF_6 Sampling," 5th bulleted paragraph, will be revised to read as follows:

> Feed material is sampled once per feed cylinder prior to feeding the material into the enrichment system to confirm feed assay. This sample will also be used to confirm that the feed material is "commercial natural UF_6" by measuring the level of ^{236}U in the sample and comparing the results to the requirements of ASTM C787, "Standard Specification for Uranium Hexafluoride in Enrichment," (ASTM, 2006) [(Exh. AES000042)] for this minor isotope.

The revised wording will be included in the FNMCP as part of Revision 3 of the EREF license application, which is expected to be submitted to the NRC in 2011.

ASLB Supplemental Question 15:

> **A typical individual with no more than a Bachelor of Science degree and four years of nuclear experience most likely has no applicable education or experience with the concepts or practice of nuclear criticality safety. That leaves one year of direct experience to qualify to be a candidate to manage nuclear criticality safety at the Eagle Rock Enrichment Facility (EREF). Why is more experience as a nuclear criticality safety engineer not required, particularly in light of the staff's response to Publicly-Available Question 15 indicating Louisiana Energy Services and Babcock & Wilcox think this is so. See Staff Initial Publicly-Available Questions Response at 23-24. Put another way, how does a manager know the scope of work the nuclear criticality safety team is supposed to do, let alone know how to do it correctly, without prior experience in performing similar activities?**

Response to Supplemental Question 15 (Tilden):

The requirements for training and experience of the EREF Nuclear Criticality Safety 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 Nuclear Criticality Safety Manager would <u>not</u> 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.I (Exh. AES000037), 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 (Exh. NRC000031), 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 Nuclear Criticality Safety 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.

ASLB Supplemental Question 17:

> **Please discuss whether, in the absence of the Production Supervisor, the Radiation Production or Chemistry Manager has precedence in an accident situation.**

Response to Supplemental Question 17 (Tilden):

According to the EREF SAR, Section 2.2.2, Shift Crew Composition (Exh. AES000037), "[t]he minimum operating shift crew consists of a Production Supervisor (or Deputy Production Supervisor in the absence of the Production Supervisor), one Control Room operator, one Radiation Protection technician, one operator for each Cascade Hall and associated UF_6 handling systems, and security personnel." Because the Production Supervisor (or Deputy Production Supervisor) position is included in the minimum operating shift crew, the Production Supervisor (or the Deputy Production Supervisor) would necessarily be present on site in the event of an accident.

As stated in the initial AES response, depending on the nature of the event, nuclear criticality safety, radiation protection, industrial hygiene, occupational safety, or security organizations may be consulted to determine the impact of an accident on plant safety or production. Any of these organizations (through the responsible manager) may recommend actions to the Production Supervisor, up to and including stopping operations.

ASLB Question 28:

> **The staff response to Publicly-Available Question 6 noted that some locality-specific factors at the EREF Idaho site will differ from conditions in Europe and speculated that these differences could cause centrifuges at the EREF to perform differently from centrifuge machines in Europe. See Staff Initial Publicly-Available Questions Response at 14. Along this line, but 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.**

Response to Question 28 (Tyler, Harper, Andrews):[4]

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[4] *See* Exhibits AES000026 (Harper Affidavit) and AES000011 (Professional Qualifications).

To identify locality-specific potential safety hazards for EREF, AES followed NUREG-1520 guidance for performing process-related hazards analysis and site-specific external events analysis in support of the ISA.

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, IROFS-related Instrumentation and Control systems will need to have setpoints that accommodate the lower atmospheric pressure at elevation (approximate elevation 1,585 m (5,200 ft) 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 ISA Summary (Exh. AES000040).

With respect to external events considered for EREF, credible external events were defined and evaluated. AES does not have access to the analyses performed for the facilities in Europe and therefore cannot compare and contrast the specific external events considered for each plant site. AES can state that locality-specific external events applicable to the Idaho site/Eastern Snake River Plain were considered, evaluated, and documented in the ISA consistent with NRC guidance in NUREG-1520. As an example of one specific external event, the EREF analysis considered volcanic activity, which is an external event likely unique to the Idaho site as compared to the plants in Europe or in New Mexico.

At bottom, the ISA identified no location-specific factors at Idaho that will affect the safety of the EREF centrifuges.