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NUCLEAR ENERGY

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ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI No. 166, Reactor Coolant Pressure Boundary Leakage Detection

Reference: Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI No. 166 SBPB 3595" email dated September 29, 2009

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated September 29, 2009 (Reference). This RAI addresses Reactor Coolant Pressure Boundary Leakage Detection, as discussed in Section 5.2.5 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 6.

The enclosure provides our response to RAI No. 166, Questions 05.02.05-1 and 05.02.05-2. Our responses do not include any new regulatory commitments and do not impact COLA content. This letter does not contain any sensitive or proprietary information.

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NRO

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Michael J. Yox at (410) 495-2436.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 27, 2009

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 166, Questions 05.02.05-1 and 05.02.05-2, Reactor Coolant Pressure Boundary Leakage Detection, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

GTG/SFW/mdf

Enclosure

Response to NRC Request for Additional Information RAI No. 166, Questions 05.02.05-1 and 05.02.05-2, Reactor Coolant Pressure Boundary Leakage Detection, Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 166

Question 05.02.05-1

The review of Calvert Cliffs RCOL application is affected by the parallel review of US EPR design certification (DC). RG 1.45 Revision 1 (dated May 2008), "Guidance on Monitoring and Response to Reactor Coolant System Leakage," Regulatory Position C.3, indicates that procedures for converting various indications to a common leakage equivalent should be available to the operators. In the response to RAI 2958-11908 Question 05.02.05-6 (ADAMS No. ML091950755), dated July 14, 2009, relating to US EPR FSAR Section 5.2.5, "Reactor Coolant Pressure Boundary (RCPB) Leakage Detection," to address the above regulatory position, AREVA indicated that the reactor coolant leakage detection procedures for instrument indication and alarm set points are to be developed by the COL Applicant. Therefore, the staff requests the COL applicant to provide the following information relating to the above RAI.

- Provide procedures to convert the instrument indications of various leakage detection (e.g., containment radioactivity monitors, containment sump level monitor, containment air cooler condensate flow rate monitor) into common leakage rate (gpm).

- In order to support the procedures described in RAI Question 05.02.05-2 for prolonged low-level unidentified leakage, the applicant is requested to define the alarm setpoints and demonstrate the setpoints are sufficiently low to provide an early warning for operator actions prior to Technical Specification (TS) limits.

Response

The procedures that provide conversion of instrument indications of various leakage detection instruments into common leak rate (gpm) will be prepared as operating and emergency operating procedures, as described in CCNPP3 FSAR Section 13.5.2.1. U.S. EPR Technical Specifications (TS) 3.4.12 and 3.4.14, which are incorporated by reference in CCNPP3 FSAR Chapter 16, contain operability and surveillance requirements for reactor coolant system (RCS) operational leakage and RCS leakage detection indication instrumentation, respectively. The alarm set-points are determined by considering factors such as sensor capability, background counts for radiation monitors, providing an early warning for operator actions prior to TS limit attainment, and development of the surveillance procedures. Furthermore, it is expected that verification of the requested information will be performed through the NRC inspection process. For example, NRC Inspection Procedure (IP) 61728, "Independent Measurement of RCS Leak Rates for a PWR," states that one of the objectives is to verify that the licensee's calculation technique for determining RCS leaks rates is adequate. The guidance in this IP includes verification of the methods used to determine identified and unidentified leak rates, which is consistent with RG 1.45.

Additionally, the information requested is addressed in RG 1.45, Revision 1. This is discussed in U.S. EPR FSAR Tier 2, Section 5.2.5 and incorporated by reference in the CCNPP Unit 3 FSAR.

COLA Impact

The COLA will not be revised as a result of this response.

Question 05.02.05-2

The review of Calvert Cliffs RCOL application is affected by the parallel review of US EPR design certification. In the response to RAI 2958-11909 Question 05.02.05-7 (ADAMS No. ML091950755), dated July 14, 2009, relating to US EPR FSAR Section 5.2.5, "Reactor Coolant Pressure Boundary (RCPB) Leakage Detection," AREVA indicated that leakage detection procedures for prolonged low-level leakage are to be developed by COL Applicant. Therefore, the staff requests the COL applicant to provide such information relating to the above RAI.

The operating experience at Davis Besse indicated that prolonged low-level unidentified leakage inside containment could cause material degradation such that it could potentially compromise the integrity of a system leading to the gross rupture of the reactor coolant pressure boundary. The applicant is requested to provide operating procedures that specify operator actions in response to prolonged low level leakage conditions that exist above normal leakage rates and below the TS limits to provide operator sufficient time to take actions before the TS limit is reached. The procedures would include identifying, monitoring, trending, and repairing prolonged low-level leakage. The guidance about developing such procedures for ensuring effective management of leakage, including low-level leakage, is available in Regulatory Guide 1.45, Revision 1 (dated May 2008), "Guidance on Monitoring and Response to Reactor Coolant System Leakage," Regulatory Position C.3.

Response

UniStar Nuclear Energy will establish procedures that specify operator actions in response to leakage rates less than the limits set forth in the plant technical specifications (TS). The procedures to specify operator actions for abnormal conditions will be prepared as operating and emergency operating procedures described in CCNPP Unit 3 FSAR Section 13.5.2.1 (see the Response to Question 05.02.05-1). Additionally, Section 5.2.5 of U.S. EPR FSAR Tier 2, Revision 1 indicates the reactor coolant pressure boundary (RCPB) leakage detection system conforms to the guidance in RG 1.45, Revision 1. Section 5.2.5 of the U.S. EPR FSAR is incorporated by reference with no departures or supplements in the CCNPP Unit 3 FSAR.

It should also be noted that the response to U.S. EPR RAI 208, Question 05.02.04-5 revised U.S. EPR FSAR Tier 2, Section 5.2.4.1.10 to provide a description of the program to control boric acid corrosion, which was the primary contributor to the Davis Besse event. CCNPP Unit 3 FSAR Section 5.2.4 incorporates U.S. EPR FSAR Tier 2, Section 5.2.4.1.10 with no departures or supplements.

COLA Impact

The COLA will not be revised as a result of this response.