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April 27, 2010

UN#10-119

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 221, Pathways of Liquid Effluents in Ground and Surface Waters

- References:
- 1) Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI 221 CHPB 4347" email dated March 23, 2010
 - 2) UniStar Nuclear Energy Letter UN#10-092, from Greg Gibson to Document Control Desk, U.S. NRC, Submittal of Response to RAI 221, Pathways of Liquid Effluents in Ground and Surface Waters, dated April 21, 2010

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 March 23, 2010 (Reference 1). This RAI addresses Pathways of Liquid Effluents in Ground and Surface Waters, as discussed in Section 2.4.13 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.

Reference 2 provided a schedule for the expected response date for Question 02.04.13-5. The enclosure provides our response to RAI 221, Question 02.04.13-5. Our response does not include any new regulatory commitments and does not impact COLA content. This letter does not contain any sensitive or proprietary information.

DOG
NRO

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Wayne A. Massie at (410) 470-5503.

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

Executed on April 27, 2010

A handwritten signature in black ink, appearing to read 'Greg Gibson', with a long horizontal line extending to the right.

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI 221, Question 02.04.13-5, Pathways of Liquid Effluents in Ground and Surface Waters, 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

Enclosure

**Response to NRC Request for Additional Information
RAI 221, Question 02.04.13-5,
Pathways of Liquid Effluents in Ground and Surface Waters
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI 221

Question 02.04.13-5

CCNPP-3 FSAR Tier 2, Rev. 6, Sections 2.4.13.1.1 to 2.4.13.1.5 describe a scenario and assumptions involving the release of radioactive materials into ground water and a surface stream following the postulated failure of the reactor coolant storage tank. A review of the radioactive inventory listed in FSAR Tier 2, Table 2.4-44 indicates that the listed radionuclide concentrations are inconsistent with supporting information presented in FSAR Tier 2, Table 11.1-2 and U.S. EPR FSAR Tier 1, Table 5.0-1. The event scenario states that the assumed radionuclide concentrations are based on 0.25% defective fuel rate, but the concentrations presented in Table 2.4-44 are much higher for 21 radionuclides, with factors ranging from about 1.2 to 5 times higher. The discussion in FSAR Section 2.4.13.1.1 does not explain the source of such differences. A review of the applicant's response (July 15, 2009) to staff RAI 104, Question 02.04.13-1 indicates that the response is incomplete as it does not provide a technical basis for the assumed higher concentrations for 21 radionuclides. As a result, the applicant is requested to provide the technical basis for the assumed higher concentrations and revise the discussion in FSAR Tier 2, Section 2.4.13.1.1 and Table 2.4-44, and U.S. EPR FSAR Tier 1, Table 5.0-1 to include the basis for the higher concentrations. The applicant should provide enough details in its response for the staff to conduct an independent evaluation and confirm compliance with Part 20, Appendix B, Table 2 liquid effluent concentration limits and SRP Section 11.2 and BTP 11-6.

Response

In AREVA's supplemental response U.S. EPR FSAR RAI 292, Question 14.03.07-34¹, U.S. EPR FSAR Tier 1, Table 5.0-1 was revised to remove duplicate information provided in U.S. EPR FSAR Tier 2, Table 2.1-2.

The differences between the list of radionuclide inventories provided in U.S. EPR FSAR Tier 2, Table 11.1-2 and U.S. EPR FSAR Tier 2, Table 2.1-2 were discussed in AREVA's supplemental response to U.S. EPR FSAR RAI 86, Question 09.01.02-21².

The response to CCNPP Unit 3 RAI 104, Question 02.04.13-04 (currently in development), will update the radionuclide inventories used for the CCNPP Unit 3 accidental release evaluation. The updated radionuclide inventory will be reflected in a revised CCNPP Unit 3 FSAR Section 2.4.13 and Table 2.4-44. The updated radionuclide inventory list that will be provided in FSAR Table 2.4-44 will be the same as that cited in U.S. EPR FSAR Tier 2, Table 2.1-2, with the exception that FSAR Table 2.4-44 will be supplemented to include an additional 11 radionuclides (Kr-83m, Kr-85, Nb-95m, Ag-110, Te-127, Xe-133m, Xe-133, Xe-135m, Xe-135, Pr-144m, Pu-239). These radionuclides are daughter products of other radionuclides present in U.S. EPR FSAR Tier 2, Table 2.1-2. For these radionuclides, the initial reactor coolant concentration is considered to be zero.

¹ L. Duncan (AREVA) to G. Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 292, FSAR Ch. 14, Supplement 1," email dated January 18, 2010.

² R. Wells (AREVA) to G. Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 86, FSAR Ch. 9, Supplement 1," email dated December 19, 2008.

COLA Impact

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