

From: [Michael Marshall](#)
To: [Wendi Para \(wendi.para@constellation.com\)](mailto:wendi.para@constellation.com)
Subject: Calvert Cliffs Nuclear Power Plant, Units 1 and 2 – Request for Additional Information Regarding Final Response to Generic Letter 2004-02 (EPID L-2017-LRC-0000)
Date: Thursday, January 11, 2024 1:09:00 PM

Hello Wendi,

By letter dated November 12, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20317A112), Constellation Generation Company, LLC (Constellation) submitted its final response to Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ML042360586), for Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in Constellation's final response to GL 2004-02 for Calvert Cliffs and has determined that additional information is needed to complete the NRC staff's review. The request for additional information (RAI) was discussed with you on January 10, 2024, and it was agreed that Constellation's response would be provided within 90 days of the date of this email.

RAIs

GL 2004-02 requested that licensees provide information confirming that their plants are in compliance with Section 50.46 of Title 10 of the Code of Federal Regulations (10 CFR) that requires plants to be able maintain adequate long-term core cooling to ensure that the fuel in the core can be cooled and maintained in a safe and stable configuration following a postulated accident. In accordance with 10 CFR 50.54(f), addressees for GL 2004-02 are required to submit written responses to the generic letter.

1. On page 17 of 141 of Attachment 1 to the letter dated November 12, 2020, the licensee states that banded calcium silicate (cal-sil) insulation uses a zone of influence (ZOI) of $5.45D$ (D is equal to the diameter of the postulated break and determines the volume of the ZOI) and 100 percent fines is assumed for all cal-sil material within the ZOI. Table 2a on page 18 of 141 states that a $6.4D$ ZOI is used for cal-sil and provides a three-category size distribution. The response states that there is no cal-sil within a $5.45D$ ZOI for any of the limiting Region I or II breaks.

Clarify which of the two debris generation models is used for the estimation of cal-sil debris generation at Calvert Cliffs.

2. Even if there is no deaeration at the mid-point of the strainer it may occur at higher strainer elevations due to lower submergence. Therefore, using the midpoint of the strainer may underestimate the amount of deaeration that occurs and the potential effects of this phenomenon. The strainer midpoint is identified as the reference location on page 41 of Attachment 1 and the phenomenon is discussed on page 71 of Attachment 1 with respect to the maximum allowable head loss values provided in Table 11a. On page 71 it is stated that deaeration is the limiting failure mode for some

anticipated operational conditions for the strainer. Therefore, a realistic or conservative deaeration value is required for the analysis.

Provide justification for using the mid-point of the strainer as a reference point for the deaeration evaluation.

3. On pages 75 and 76 of 141 of Attachment 1 to the letter dated November 12, 2020, the licensee states that the excessive particulate included in the Summer 2010 tests can be credited to make up for a lack of chemical precipitate added to those tests for the 12B cold-leg break and 12 hot-leg break at the steam generator. Theoretically this may be true, but the effect of chemicals on head loss is generally much greater than that of typical particulate coatings surrogates. In the Calvert Cliffs tests, precipitates had a much larger effect than coatings. The effect of precipitates and coatings on head loss depends on other factors in the test.

Provide additional information to justify that the tests bound the plant conditions for the Region II tests or provide justification that the testing justifies that the strainer will perform its function under realistic conditions as allowed by a Region II analysis.

4. On page 76 of 141 of Attachment 1 to the letter dated November 12, 2020, the licensee states that the head loss from Test No. 3 is scaled down to 1150 gallons per minute (gpm) and that is below all applicable head loss limits in Table 11A.

Provide the head loss value calculated at 1150 gpm that was used in the evaluation.

5. On page 92 of 141 of Attachment 1 to the letter dated November 12, 2020, the limiting net positive suction head (NPSH) margin value for the containment spray system pump is listed as 1.63 feet for maximum sump pool temperature cases. On page 71 the minimum NPSH margin value is listed as 2.07 feet for cases greater than 140 degree Fahrenheit.

Provide an explanation for the difference between these values.

6. If the flow rates are not controlled per the procedural changes that are stated to be in progress by the submittal, the NPSH margins in the submittal will be non-conservative. The commitment to revise the EOP is listed in Attachment 2 of and discussed on Page 4 of 141 of Attachment 1 of the letter dated November 12, 2020.

Confirm that the emergency operating procedures (EOPs) have been revised to ensure the maximum flow rate through the strainer is limited to 2365 gpm during recirculation and that the procedures are in place to ensure that post-recirculation actuation signal flow is limited to 600 gpm.

Best Regards,
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301-415-2871

Docket No. 50-317 and 50-318