

From: Lee, Samson
Sent: Tuesday, March 2, 2021 4:47 PM
To: Richardson, Michael
Subject: Request for additional information for Diablo Canyon Generic Letter 2004-02 Submittal (L-2017-LRC-0000)

By letter dated April 30, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20121A095), Pacific Gas and Electric Company (PG&E or the licensee) submitted a final response to close Generic Letter (GL) 2004-02, dated September 13, 2004 (ADAMS Accession No. ML042360586), "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," for the Diablo Canyon Power Plant, Units 1 and 2 (Diablo Canyon). 10 CFR 50.46 requires that plants are able to maintain adequate long-term core cooling (LTCC) to ensure that the fuel in the core can be cooled and maintained in a safe and stable configuration following a postulated accident. GL 2004-02 requested that licensees provide information confirming that their plants are in compliance with the regulation. During its review of the licensee's submittal, the NRC staff identified that it required additional information to confirm the licensee's evaluation.

The staff sent the draft request for additional information (RAI) to the PG&E staff, who determined that no clarification call was necessary. The PG&E staff requested, and NRC agreed, to a RAI response by April 15, 2021. The NRC staff considers that timely responses to RAIs contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the agreed upon response date, please contact me at (301) 415-3168 or via e-mail Samson.Lee@nrc.gov.

Please provide the following information:

- 1) Table 3.b.1-1 of the April 30, 2020 submittal states that WCAP-17561 was used to determine the zone of influence (ZOI) for Temp-Mat. The ZOI credited is 3.7D. The NRC staff reviewed WCAP-17561 and found that the methods and results in the WCAP were generally acceptable. However, the NRC staff determined that some of the test geometries for the Temp-Mat tests may not have been representative or conservative with respect to those installed in plants. The text in Section 3.b.1 states that the amount of debris included in the testing exceeded the debris quantity that would result if a ZOI of 11.7D (NRC generically approved ZOI for Temp-Mat) were applied. As used in the current debris generation and head loss analysis, this is a conservative assumption and is acceptable. This issue regarding the test geometry for the WCAP-17561 testing is not relevant to Diablo Canyon's current submittal but could be relevant to future modifications or operability determinations. If future actions assume the reduced ZOI based on WCAP-17561, and the use of this ZOI is not appropriate for the plant specific geometry, the amount of fibrous debris generated could exceed that included in the plant specific testing. Please justify that the WCAP-17561 ZOI is representative of the plant geometry or explain how the potential discrepancy will be managed.
- 2) Provide an overview of the analysis method for the Temp-Mat ZOI "length" for the hot and cold-leg nozzle breaks. Also, describe how the break geometries and sizes were determined and how these geometries relate to the assigned ZOI volumes.
- 3) Please provide additional details regarding the submergence of the strainer for the Small Break Loss-of-Coolant Accident (SBLOCA) scenario. Section 3.f.11 of the submittal states that the submerged height of the strainer is 1.01 ft. for the front and 1.79 ft. for the rear sections. It also

states that the headloss is 0.758 ft. This is less than half of the rear section submergence, but greater than half of the front section submergence. Considering Regulatory Guide 1.82 guidance, please explain why this condition is acceptable? Also, please provide details of the timing of additional submergence for this case. For example, how long does it take the height of the pool to increase such that the strainer is fully submerged? If this occurs relatively quickly, it may be demonstrated that headloss will not increase quickly enough to cause partially submerged strainer failure.

- 4) Related to question 3 above, Section 3.g.5 of the submittal states that the Containment Spray (CS) pumps may not be actuated. Table 3.g.12-1 implies that the volume injected from the Refueling Water Storage Tank (RWST) for the SBLOCA assumes CS flow. Please describe how the status of CS affects strainer submergence for the SBLOCA case. The submittal demonstrates that there is adequate margin to account for the sump level reduction that may occur due to reduced injection from the RWST. Please confirm that future changes to net positive suction head (NPSH) calculations will account for the actual minimum sump level that may occur. The potential for a reduction in sump level of 1.3 ft. may be evaluated against increased NPSH available from other sources. For example, if CS does not actuate, there is additional inventory available because CS piping is not filled. In addition, debris headloss is very low at start of recirculation. Other aspects of the scenario may be considered.
- 5) In Section 3.f.14 of the submittal, it was determined that the maximum amount of entrained gases that can reach the pump suction is 0.17 percent. Was the NPSH required value used in the NPSH margin calculation adjusted per the guidance in Regulatory Guide 1.82, Appendix A-3, to account for the entrained gases? If not, please describe how the effect of entrained gases on pump performance was evaluated.
- 6) For the in-vessel evaluation, please provide the WCAP-17788 chemical effects test group number that was applied to the Diablo Canyon in-vessel analysis and confirm it is representative of projected post-LOCA plant conditions.

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