

**From:** [Tobin, Jennifer](#)  
**To:** ["Grabnar, John J"](#)  
**Cc:** [Lashley, Phil H \(EH\)](#)  
**Subject:** Beaver Valley FINAL RAIs for GL 04-02 Closure  
**Date:** Tuesday, March 23, 2021 11:35:00 AM

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Dear Mr. Grabnar,

By letter dated November 30, 2020 (Agencywide Documents Access and Management Systems Accession No. ML20335A564), Energy Harbor Nuclear Corporation (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 Beaver Valley Power Station, Units 1 and 2 (BVPS).

The Nuclear Regulatory Commission's (NRC) staff is reviewing your submittal and has determined that additional information is needed to complete its review.

A clarification call was held March 23<sup>rd</sup> but resulted in no changes to the DRAFT RAIs. A response to these FINAL RAIs are due May 31<sup>st</sup>, these questions will be made publicly available in ADAMS.

Please contact me if you have concerns.

Thanks!  
-Jenny

### **Regulatory Basis for Requests for Additional Information:**

In letter dated November 30, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20335A564), Energy Harbor Nuclear Corp., 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 Beaver Valley Power Station, Units 1 and 2 (BVPS). 10 CFR 50.46(b)(5) requires that plants are able 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. Note that the page numbers referenced here are from the ADAMS PDF referenced above.

### **Requests:**

1. Provide details on how the Foamglas (pg 18 of 62, table 3.b-2) is accounted for in the unit 1 Loop large break loss of coolant accident break headloss test. Is the Foamglas characterized as fiber or particulate? State which test accounts for the debris term that includes Foamglas debris.
2. Provide the test number that bounded the 24 lb of Thermal Wrap for unit 2 (pg 19 of 62, table 3.b-3) estimated to transport to the strainer for the 6-inch pressurizer power operated relief valve inlet break. The NRC staff noted that Test 1A included 17 lb of Temp-Mat "fines" and 17 lb of "smalls". The staff understands that the Thermal Wrap is all assumed to be "fines" (24 lb) per table 3.e-14.

3. Verify that the Unit 2 limiting headloss values from Table AI-4 (referenced RAI responses in ML102770023, pg 98 of 136) are the limiting values used in the Unit 2 net positive suction head calculations.
4. Provide information regarding the testing and calculations that support the determination of core inlet debris amounts as described in the following sub-bullets. The staff recognizes that the debris amounts submitted by the licensee demonstrate significant margin to the analyzed limit. The staff questions are intended to assure understanding of the methodology used, and that combined, the issues would not result in a significant change in the calculated amount of fibrous debris that could reach the core.
  - a. The evaluation of the test flow rate for penetration testing for Unit 1 (pg 42 of 62) states that a higher flow rate forces large fibers onto the strainer earlier in the scenario which increases the filtration efficiency of the debris bed. This is not consistent with the fact that testing has consistently shown that higher flow rates lead to increase penetration. The discussion under (1) contradicts empirical findings from strainer penetration testing. The discussion under (2) did not clearly state the test flow rate and compare this to the plant flow rate. The baseline for the 30% flowrate increase is unclear. Provide the plant and test flow rates, and discuss what the 30% flow increase is referenced to.
  - b. For the Unit 2 penetration testing, small pieces of fiber were included (pg 49 and 50 of 62). The results calculated a percent bypass fraction by subtracting the small pieces from the total. This is acceptable from a penetration bypass fraction calculation perspective. Provide the basis for the assumption that the small pieces of fiber did not capture or otherwise reduce the amount of fine fiber available to penetrate the strainer in a non-prototypical manner.
  - c. In the calculation of the fiber amount arriving at the core, it was assumed that some fiber bypassed the core and recirculated via the RSS (pg 50 of 62). Provide the assumptions for flowrates through the ECCS and the RSS. Also provide the basis for the assumption that the RSS will start and run for the period of time assumed in the analysis.