

**From:** Paige, Jason  
**Sent:** Thursday, April 28, 2022 10:07 AM  
**To:** Gropp Jr, Richard W:(Constellation Nuclear); Loomis, Thomas R:(Constellation Nuclear)  
**Subject:** Peach Bottom - Formal RAI for Proposed Alternative I5R-14, Revision 1 (EPID L-2022-LLR-0006)

Good morning, Richard and Tom.

By letter dated December 20, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession ML22003A002), Constellation Energy Generation (the licensee) requested the use of an alternative in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2) to certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI. Proposed alternative I5R-14, Revision 1, pertains to the previously-repaired 2-inch reactor vessel (RV) instrument penetration nozzle N-16A at Peach Bottom Atomic Power Station (Peach Bottom), Unit 2, to remain in service for the remaining plant life. A proposed alternative (i.e., I5R-14) dated November 24, 2020 (ADAMS Accession ML20329A345) concerning this nozzle repair was previously approved by the NRC for one operating cycle (ADAMS Accession ML21110A680). The current proposed alternative (i.e., I5R-14, Revision 1) applies to the remainder of the fifth 10-year inservice inspection (ISI) interval and the plant life which is scheduled to conclude on August 8, 2053.

The NRC staff has determined that the below additional information is needed to complete its review. A response is requested by June 1, 2022.

1. Section 3.1 of Attachment 5 to the submittal discussed the capacity factors in terms of operating time per calendar time and the associated corrosion rates in terms of inch per year (ipy).
  - a. Discuss how the values for the corrosion rates (ipy) were obtained.
  - b. Provide the assumed capacity factor for Peach Bottom, Unit 2 during future operation.
  - c. Discuss the amount of metal loss in the RV bore where the nozzle is repaired at the end of 80 years (i.e., how much enlargement would occur in terms of inches of the RV bore as the result of general corrosion?).
2. Confirm that the design of the repaired nozzle accounts for all design basis loading conditions which could lead to nozzle ejection over the remaining life of the plant.
3. Table 4-8 in Attachment 3 to the submittal provides the projected bounding transient cycles to 80 years for the calculation of the flaw in the original J-groove weld. Discuss whether the bounding cycles in Attachment 3 are consistent with the transient cycles report in the Peach Bottom license renewal application (ADAMS Accession ML18193A689). If the answer is no, provide justification.
4. Section 4.2.2 of Attachment 3 to the submittal provides information on the fracture material properties including adjusted reference nil-ductility temperature  $RT_{NDT}$  (ART) of

the N16 water level instrumentation nozzle. Discuss whether the ART was calculated based on Regulatory Guide (RG) 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," and the neutron fluence value predicted to the end of 80 years of operation.

5. Regarding the flaw growth evaluation in Attachment 3 to the submittal, what is the final crack size in the RV shell at the end of 80 years?

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**Recipients:**

"Gropp Jr, Richard W:(Constellation Nuclear)" <Richard.Gropp@constellation.com>  
Tracking Status: None  
"Loomis, Thomas R:(Constellation Nuclear)" <thomas.loomis@constellation.com>  
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