

**From:** Wentzel, Michael  
**Sent:** Monday, July 13, 2020 2:27 PM  
**To:** Orf, Tracy J  
**Subject:** Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Request for Additional Information Regarding Alternative Request No. 0-ISI-47 (EPID L-2020-LLR-0034)  
**Attachments:** Browns Ferry Request for Additional Information Regarding Proposed Alternative 0-ISI-47.pdf

Dear Mr. Orf:

By application dated February 28, 2020, (Agencywide Documents Access and Management System Accession No. ML20059N637), the Tennessee Valley Authority submitted Proposed Alternative Request No. 0-ISI-47 to certain requirements of the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code for the third, fifth, and fourth 10-year inservice inspection intervals for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively.

The U.S. Nuclear Regulatory Commission's (NRC's) Vessels and Internals Branch (NVIB) staff is reviewing the application and has identified areas where it needs additional information to support its review. The NRC staff's request for additional information (RAI) is attached. As previously discussed with you, the NRC staff requests your response to the RAI within 30 days of the date of this email.

If you have any questions, please contact me at (301) 415-6459 or [michael.wentzel@nrc.gov](mailto:michael.wentzel@nrc.gov).

Sincerely,

Michael Wentzel, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

**Hearing Identifier:** NRR\_DRMA  
**Email Number:** 675

**Mail Envelope Properties** (DM6PR09MB5784452A1723F2446B79DDF0E7600)

**Subject:** Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Request for Additional Information Regarding Alternative Request No. 0-ISI-47 (EPID L-2020-LLR-0034)  
**Sent Date:** 7/13/2020 2:27:28 PM  
**Received Date:** 7/13/2020 2:27:28 PM  
**From:** Wentzel, Michael

**Created By:** Michael.Wentzel@nrc.gov

**Recipients:**  
"Orf, Tracy J" <tjorf@tva.gov>  
Tracking Status: None

**Post Office:** DM6PR09MB5784.namprd09.prod.outlook.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	1161	7/13/2020 2:27:28 PM
Browns Ferry Request for Additional Information Regarding Proposed Alternative 0-ISI-47.pdf 120500		

**Options**  
**Priority:** Normal  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**

**REQUEST FOR ADDITIONAL INFORMATION**

**PROPOSED ALTERNATIVE REQUEST NO. 0-ISI-47**

**FOR THE THIRD, FIFTH AND FOURTH 10-YEAR INSERVICE INSPECTION INTERVALS**

**BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3**

**TENNESSEE VALLEY AUTHORITY**

**DOCKET NOS. 50-259, 50-260, AND 50-296**

By letter dated February 28, 2020, (Agencywide Documents Access and Management System (ADAMS), Accession No. ML20059N637), Tennessee Valley Authority (TVA, the licensee), submitted Proposed Alternative Request No. 0-ISI-47 (Proposed Alternative) to certain requirements of the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code (ASME Code), for the third, fifth and fourth 10-year inservice inspection (ISI) intervals for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, respectively. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(z)(1), the licensee requested approval to implement alternative Boiling Water Reactor Vessel and Internals Program (BWRVIP) Guidelines in lieu of ASME Code Section XI Table IWB-2500-1 Examination Category B-N-1 and B-N-2 requirements.

The U.S. Nuclear Regulatory Commission's (NRC's) Vessels and Internals Branch (NVIB) staff is reviewing the application and has identified areas where it needs additional information to support its review. In order for the NRC staff to determine if the proposed alternative may be authorized pursuant to 10 CFR 50.55a(z)(1), the staff requests the licensee provide the following additional information.

**RAI 1**

The regulations at 10 CFR 50.55a(g)(4) require inservice inspection of ASME Code Class 1 components to be performed in accordance with Section XI of the ASME Code. The licensee has proposed an alternative to the inspection requirements of Section XI for ASME Code Class 1, Examination Category B-N-1 and B-N-2 components. The licensee proposed that the lower plenum inspection be performed in accordance with BWRVIP Topical Report, BWRVIP-47-A, "*BWR Vessel and Internals Project Boiling Water Reactor Lower Plenum Inspection and Flaw Evaluation Guidelines.*"

Section 3.2.4 in BWRVIP-47-A states that no additional inspections are recommended beyond the baseline inspections, and scope expansion and follow-on inspections deemed necessary in the event flaws are found. Section 3.2.4 in BWRVIP-47-A also states, in part, that baseline inspection results will be reviewed by the BWRVIP and, if deemed necessary, reinspection recommendations will be developed at a later date and provided to the NRC. The NRC staff concluded in the final safety evaluation (BWRVIP-47-A, Appendix C, Section 2.3) that the "BWRVIP committed to address the issue of reinspection in the future after initial baseline inspections have been completed by a majority of U. S. BWRs. The staff accepted this commitment."

Because the licensee's proposed alternative references an safety evaluation with an unresolved commitment, and the BWRVIP has not yet provided revised inspection guidance, the NRC staff requests that the licensee address the following related to the inspection of the lower plenum components:

- Discuss whether inspections of the lower plenum components are planned for the third, fifth and fourth ISI intervals at BFN Units 1, 2 and 3, respectively.
- Discuss whether the lower plenum components at BFN, Units 1, 2, and 3 are accessible for inspection.
- If inspections are not planned and lower plenum components are accessible, provide a technical basis describing how the integrity and function of the lower plenum supports will be maintained regarding potential degradation due to intergranular stress corrosion cracking (IGSCC).

## **RAI 2**

BWRVIP-62-A, "*Technical Basis for Inspection Relief for BWR Internal Components with Hydrogen Injection,*" regarding the noble metal chemical addition (NMCA) process and hydrogen water chemistry (HWC), moderate (HWC-M), has been accepted for use as the bases for claiming relief from certain BWRVIP inspections. As described in BWRVIP-62-A, NMCA is a process in which noble metal is added in batches to the reactor coolant system during refueling outages, and small amounts of hydrogen are continuously injected during plant operation. The NRC staff safety evaluation for BWRVIP-62 accepted for use three criteria that plants applying noble metal chemistry must meet to demonstrate mitigation of IGSCC:

- 1) Measured electrochemical potential (ECP) less than or equal to -230 millivolts (mV).
- 2) Measured hydrogen-to-oxygen molar ratio greater than or equal to 3.
- 3) Measured catalyst loading greater than or equal to a specific proprietary value.

BWRVIP-62-A is referenced by other BWRVIP inspection and evaluation guidelines, and implementation of water chemistry in accordance with BWRVIP-62-A is credited to reduce the inspections identified in those documents.

By letter dated January 24, 2018, "Electric Power Research Institute - Status of BWRVIP-62 Revision and Inspection Relief for BWR Piping Welds and Internal Components with Hydrogen Injection" (ADAMS Accession No. ML18033A323), the BWRVIP stated that the BWRVIP had issued the following interim guidance to its members:

U.S. plants utilizing all forms of HWC and crediting HWC shall meet the conditions and limitations of BWRVIP-62-A. In the case of plants utilizing OLNLC [online noble metal chemistry], this means they shall meet the Category 3a NMCA parameters and implementation steps (including platinum loading) of Tables 3-5 and 3-8. This guidance is issued as NEI 03-08 'Needed' guidance.

Because OLNLC is one method to introduce noble metal, plant-specific implementation of OLNLC, which demonstrates conformance with the performance criteria of BWRVIP-62-A, can utilize the

inspection credit as specified in sources referencing BWRVIP-62-A, consistent with the BWRVIP interim guidance provided in its January 24, 2018, letter to the NRC.

The licensee submittal dated February 28, 2020 did not identify the method of chemical mitigation for IGSCC as described above. Since there is a correlation between the chemical mitigation program implemented and the inspection frequency specified by the BWRVIP alternative, staff requires additional information to complete its review.

1. Identify the type of chemical mitigation method that is being implemented at BFN, Units 1, 2, and 3.
2. Identify how the conditions and limitations of BWRVIP-62-A are being met. In addition, if the chemical mitigation method is OLNC, provide information specific to the Category 3A NMCA parameters and implementation steps as described in the safety evaluation to the 2018 supplement to the BWRVIP-62-A report (ADAMS Accession No. ML18142A019).

### **RAI 3**

The licensee's proposed alternative states:

*When a BWRVIP Guideline refers to ASME Section XI, the technical requirements of ASME Section XI as described by the BWRVIP Guideline will be met, but the examination is under the jurisdiction of the BWRVIP Program as defined by BWRVIP-94, "BWRVIP Vessel and Internals Project Program Implementation Guide." When implementing the guidance of BWRVIP-94, BFN Units 1, 2, and 3 will meet the following:*

*"When BWRVIP Guidelines are approved by the Executive Committee and are initially distributed, or subsequently revised, each utility shall modify their vessel and internals program documentation to reflect the new requirements and shall implement the guidance within two refueling outages, unless a different schedule is identified by the BWRVIP at the time of document distribution. Implementation is to be based on the date of the distribution/notification letter to the members. Implementation means not only incorporating the requirements into the utility program, but also performing the initial or baseline inspection and evaluation requirements.*

*However, if new guidance approved by the Executive Committee includes revisions to NRC approved guidance that are less conservative than those approved by the NRC, this less conservative guidance shall be implemented only after NRC approves the change or if the guidance is approved through the NEI 03-08 screening process."*

*Therefore, where the revised version of a BWRVIP Inspection Guideline continues to also meet the requirements of the version of the BWRVIP Inspection Guideline that forms the safety basis for the NRC authorized proposed alternative to the requirements of 10 CFR 50.55a, it may be implemented. Otherwise, the revised Guidelines will only be implemented after NRC approval of the revised BWRVIP Guidelines, approved through the NEI 03-08 document*

*screening process, or approved by the NRC as a plant-specific request for an alternative.*

The NRC staff is unable to approve the licensee proposal that BWRVIP guidelines can be revised without a subsequent plant-specific request, because the licensee is requesting to use revisions of BWRVIP Topical Reports that are not available for review by NRC staff. Therefore, the NRC staff requests that the licensee remove the above paragraphs from the proposed alternative request.