

**From:** Green, Kimberly  
**Sent:** Monday, February 8, 2021 6:49 AM  
**To:** Wells, Russell Douglas  
**Cc:** Shoop, Undine  
**Subject:** Request for Additional Information Regarding TVA's Request to Revise the Watts Bar Nuclear Plant, Unit 1 Technical Specifications Related to Steam Generator Tube Inspection Frequency (EPID L-2020-LLA-0161)  
**Attachments:** Final RAI.pdf

Dear Mr. Wells,

By letter dated July 17, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20199M346), as supplemented by letter dated October 13, 2020 (ADAMS Accession No. ML20287A569), Tennessee Valley Authority (TVA) requested changes to the Technical Specifications (TS) for Watts Bar Nuclear Plant, Unit 1. The proposed changes would revise the steam generator tube inspection frequency requirements in TS 5.7.2.12, "Steam Generator (SG) Program," and TS 5.9.9, "Steam Generator Tube Inspection Report." The proposed changes also include the adoption of Technical Specifications Task Force Technical Change Traveler 510, Revision 2.

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has identified areas where additional information is needed to complete its review.

A draft request for additional information (RAI) was previously transmitted to you by email dated January 22, 2021. At your request, a clarification call was held on February 1, 2021, to clarify the NRC staff's requests. Based on the discussion during that call, the NRC revised request 5.a to separate the request into three separate requests (i.e., 5.a, 5.b, and 5.c) for clarity. Accordingly, request 5 now has five subparts (a through e). Minor editorial changes were made to requests 5.b and 5.c; however, no changes were made to the scope of the requests. The other requests remain the same.

As agreed during the call, a response to the attached RAI is requested by March 19, 2021.

The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1627 or via email at [Kimberly.Green@nrc.gov](mailto:Kimberly.Green@nrc.gov).

Sincerely,  
Kimberly J. Green, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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**From:** Green, Kimberly

**Created By:** Kimberly.Green@nrc.gov

**Recipients:**

"Shoop, Undine" <Undine.Shoop@nrc.gov>

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"Wells, Russell Douglas" <rdwells0@tva.gov>

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REQUEST FOR ADDITIONAL INFORMATION

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-390

STEAM GENERATOR TUBE INSPECTION FREQUENCY CHANGES AND

ADOPTION OF TECHNICAL CHANGE TRAVELER TSTF-510

INTRODUCTION

By letter dated July 17, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20199M346), as supplemented by letter dated October 13, 2020 (ADAMS Accession No. ML20287A569), Tennessee Valley Authority (TVA, the licensee) requested changes to the Technical Specifications (TSs) for Watts Bar Nuclear Plant (Watts Bar), Unit 1. The proposed changes would revise the steam generator (SG) tube inspection frequency requirements in TS 5.7.2.12, "Steam Generator (SG) Program," and TS 5.9.9, "Steam Generator Tube Inspection Report." The proposed changes include the adoption of Technical Specifications Task Force (TSTF) Technical Change Traveler 510 (TSTF-510), Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection."

REGULATORY BASIS

Section 50.36, "Technical specifications," of Title 10 of the *Code of Federal Regulations* (10 CFR), establishes the regulatory requirements related to the content of the TSs. The TSs for all current pressurized-water reactor licenses require that an SG Program be established and implemented to ensure that SG tube integrity is maintained. Fundamental regulatory requirements with respect to the integrity of the SG tubing are established in 10 CFR Part 50. Specifically, the general design criteria (GDC) in Appendix A to 10 CFR Part 50 establish minimum requirements for the principal design criteria for nuclear power plants and state that the reactor coolant pressure boundary shall have "an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture" (GDC 14); "shall be designed with sufficient margin" (GDCs 15 and 31); shall be of "the highest quality standards practical" (GDC 30); and, shall be "designed to permit (1) periodic inspection and testing...to assess their structural and leak tight integrity" (GDC 32). Section 3.1.2 of the Watts Bar UFSAR addresses conformance with the GDC in Appendix A to 10 CFR Part 50 (ADAMS Accession No. ML19176A129).

INFORMATION REQUESTED

In order to complete its evaluation of whether the proposed TS changes meet the SG Program requirements described above, the U.S. Nuclear Regulatory Commission staff requests the following information.

1. Provide a correction or justification for the one instance of "repair criteria" in the proposed changes to 5.7.2.12.d.2. To conform to TSTF-510, as corrected by NRC letter

to the TSTF dated June 17, 2013 (ADAMS Accession No. ML13120A541), “repair criteria” in this instance should be replaced with “plugging criteria.”

2. On page 11 of Enclosure 1 to the LAR supplement, the third full paragraph in Section 3.1.2, “Mechanical Wear at Horizontal [Advanced Tube Support Grid] ATSGs,” contains a sentence about U-bend wear. This sentence appears to be in the wrong section of the report. Confirm the actual operating interval between inspections and the worst-case projected support structure wear indications.
3. In Enclosure 1 of the LAR, Section 3.2.7, “Discussion of Growth Rates, OA Methods, Projections, and Results,” contains a statement that, “the observed behavior of ATSG wear growth rates are considered encompassing of that for tube wear occurring at U-bend supports.” Clarify the meaning of this statement, considering that the paragraph that follows identifies higher wear growth rates at U-bend supports than at ATSG locations.
4. Attachment 7 to Enclosure 1 of the LAR supplement describes the process for comparing eddy current wear indications that were sized with the bobbin probe during different inspections. The comparison is complicated by the use of a different probe reference standard in the R14 inspection than in prior inspections. Please provide the following clarifications:
  - a. Attachment 7 states that adjustment is necessary to compare U1R14 combination bobbin/array probe wear sizing to bobbin probe wear sizing in previous inspections, and that this adjustment is used to develop growth rates. Describe the adjustment and explain how the adjustment was applied to the tables in Attachments 3 and 4 comparing wear depths from different inspections. In addition, please clarify whether the wear values for U1R14 in Figure 3 (Enclosure 1) are adjusted in the way described in Attachment 7.
  - b. Clarify the meaning of the statement in Attachment 7 that, “Use of this sizing method is considered supplementary to the application of the condition monitoring limits associated with ETSS 96004.1.” If this was the wear sizing method used in U1R14, and sizing is required to perform condition monitoring, explain why this method is considered supplementary.
5. Sections 4.1.4 and 4.2.4 of Enclosure 1 of the LAR supplement describe the use of a volume-based wear approach for assessing U-bend support wear and ATSG wear, respectively. The staff requests the following information about the volume-based wear approach.
  - a. Clarify the description in Section 4.1.4 of how benchmarking was performed for the volumetric wear approach.
  - b. Explain how the non-matched indications in Figure 4-1 were assigned values of predicted wear (i.e., x-axis values), the basis and meaning of the linear regression of the non-matched indications, and the significance of the upper bound line given that one value is above it.

- c. Discuss the statement in Section 4.1.4 that a slope less than unity indicates a conservative condition for application of the benchmarking parameters since it appears this is only true for data points below the red line with a slope of 1.
  - d. Section 4.2.4 of Enclosure 1 of the LAR supplement states that volumetric wear evaluation for ATSG wear requires two of the flaws to be treated as tapered wear using rotating probe inspection data. The text refers to Figure A4-8 (labeled A4-16 in Attachment 4), which is an array probe terrain plot. Describe how the array probe terrain plots were used to provide the necessary flaw profile information.
  - e. In the paragraph following Figure 4-1 in Section 4.1.4 of Enclosure 1 of the LAR, clarify the statement that the inputs to the volume-based wear model are measured wear depths from the U1R14 inspection and eddy current look-up depths for these flaws from the U1R8 and UR11 inspections. In addition, if U1R8 depths are used as inputs, explain why growth rates are based only on growth between U1R11 and U1R14.
6. During the review, the NRC staff identified the following apparent discrepancies. Confirm the correct information.
- a. Several figures in Enclosure 1 of the LAR supplement appear to be mis-numbered as identified in the table below.

<b>Table of Contents</b>	<b>Text</b>	<b>Figure Label</b>
Figure A3-1	Figure A3-1	Figure A3-5
Figure A3-2	Figure A3-2	Figure A3-6
Figure A3-3	Figure A3-3	Figure A3-7
Figure A3-4	Figure A3-4	Figure A3-8
Figure A4-1	Figure A4-1	Figure A4-9
Figure A4-2	Figure A4-2	Figure A4-10
Figure A4-3	Figure A4-3	Figure A4-11
Figure A4-4	Figure A4-4	Figure A4-12
Figure A4-5	Figure A4-5	Figure A4-13
Figure A4-6	Figure A4-6	Figure A4-14
Figure A4-7	Figure A4-7	Figure A4-15
Figure A4-8	Figure A4-8	Figure A4-16
Figure A5-1	Not used	Figure A5-2
Figure A6-1	Figure A6-1	Figure A6-5
Figure A6-2	Figure A6-2	Figure A6-6
Figure A6-3	Figure A6-3	Figure A6-7
Figure A6-4	Figure A6-4	Figure A6-8
Not Used	Not Used	Figure A6-9
Figure A7-1	Figure A7-1	Figure A7-2

- b. The heading on Page E1-10 of 25 in the LAR identifies the U1R14 outage as occurring in Fall 2016 rather than Spring 2017.