

**From:** Green, Kimberly  
**Sent:** Thursday, March 24, 2022 11:22 AM  
**To:** Wells, Russell Douglas  
**Subject:** Request for Additional Information and Confirmation of Information Related to TVA's Request for Changes to Watts Bar Nuclear Plant, Units 1 and 2, Technical Specification 3.7.8 (EPID L-2021-LLA-0174)  
**Attachments:** Final RAI 03-24-22.pdf

Dear Mr. Wells,

By letter dated September 29, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21273A046), the Tennessee Valley Authority (TVA) requested changes to the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2, Technical Specifications (TS). The proposed changes would revise TS 3.7.8, "Essential Raw Cooling Water (ERCW) System," by adding a new Condition A to Watts Bar, Unit 1, TS 3.7.8, to permanently extend the allowed Completion Time to restore one ERCW system train to operable status from 72 hours to 7 days. The proposed changes also include revising the bounding temperature for the ultimate heat sink in Condition A to less than or equal to 78 degrees Fahrenheit, and adding and/or revising the Note, numbering, and wording of the Conditions to specify when the Conditions apply.

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

A draft request for additional information (RAI) and confirmation of information (RCI) was previously transmitted to you by email dated March 10, 2022. At your request, a clarification call was held on March 24, 2022, to clarify the NRC staff's draft RAI and RCI. As a result of the clarification call, no changes were made to the requests.

As agreed during the call, a response to the attached RAI and RCI is requested by May 2, 2022.

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

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

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REQUEST FOR ADDITIONAL INFORMATION AND  
REQUEST FOR CONFIRMATION OF INFORMATION

WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-390 AND 50-391

EXTEND COMPLETION TIME TO RESTORE ONE ESSENTIAL RAW COOLING WATER  
SYSTEM TRAIN TO OPERABLE

By letter dated September 29, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21273A046), the Tennessee Valley Authority (TVA) submitted a license amendment request (LAR) to the U.S. Nuclear Regulatory Commission (NRC) for the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. The proposed amendments would revise Watts Bar, Unit 1 and 2, Technical Specification (TS) 3.7.8, "Essential Raw Cooling Water (ERCW) System," by adding a new Condition A to Watts Bar, Unit 1, TS 3.7.8, to permanently extend the allowed Completion Time to restore one ERCW system train to operable status from 72 hours to 7 days, to support maintenance on the Watts Bar, Unit 2, 6.9 kilovolt shutdown boards. The proposed amendments would also revise the bounding temperature for the ultimate heat sink (UHS) in Condition A to less than or equal to 78 degrees Fahrenheit. Additionally, the proposed amendments would add and/or revise the Note, numbering, and wording of the Conditions to specify when the Conditions apply.

Regulatory Bases:

General Design Criterion (GDC) 44, "Cooling Water," requires, in part, that the system safety function shall be to transfer heat loads to the ultimate heat sink under normal and accident conditions, and that suitable redundancy in components shall be provided to assure that the system safety function can be accomplished, assuming a single failure.

Section 4.1 of the Enclosure to the LAR indicates that the ERCW system is designed to comply with GDC 44. Sections 3.2.4, 3.2.5, and 3.2.6 of the Enclosure to the LAR provide TVA's thermal and hydraulic analyses to demonstrate that the operation of the ERCW system under the proposed LAR conditions (e.g., revised UHS temperature limit, reduced number of operable ERCW pumps and EDGs, and one unit defueled) will be able to maintain its GDC 44 capabilities to perform its safety function of adequate component cooling capability for a design basis accident under the most limiting single failure.

**SCPb RAI-1**

In TVA’s thermal analyses, Table 8 and Table 9 of the Enclosure to the LAR listed the following design parameters to compare against calculated values to show the margin of the heat removal capability (left column).

<b>Parameter</b>	<b>Design Minimum (Current LAR) Btu/hr</b>	<b>Design Maximum (Previous LAR) Btu/hr</b>
A/B Train – Component Cooling System (CCS) Heat Exchanger (HX) Duty	88,764,506	106,183,506
Residual Heat Removal HX Duty	54,800,000	54,800,000
Spent Fuel Pool HX Duty	32,420,000	32,420,000
Core Spray System (CSS) HX Duty	87,323,731	81,294,921

The design of the ERCW in the proposed LAR has not been changed since the previous LAR for a similar analysis (ADAMS Accession No. ML19038A483). However, the NRC staff noted that the design values for the CCS HX Duty and CSS HX Duty in the proposed LAR are inconsistent with those data used in the previous LAR (right column, see Table 5 of Enclosure 1). For example, the design value (minimum) for the CSS HX duty for the current LAR is higher than the design value (maximum) for the CSS HX duty for the previous LAR. Also, the design values (minimum and maximum) for the RHR HX duty and spent fuel pool HX duty are the same.

Provide the following:

- a. Explain the above apparent inconsistencies
- b. Clarify which values (minimum or maximum) should be used for the determination of the margin of the heat removal capability and revise accordingly, if needed, and
- c. Identify the source of the design data used for the current LAR.

**SCPb RAI-2**

Section 3.2.4 of the Enclosure to the LAR describes the thermal hydraulic evaluation method developed by TVA to support its request to extend the completion time for restoring one train of ERCW to operable status and to increase the UHS temperature. The methodology of the current analysis is similar to the one developed for the previous LAR (ADAMS Accession No. ML19038A483). Section 3.2.7 of both LARs (current and previous) list the analysis assumptions and conservatisms used in the respective analysis. In addition to the differences as identified in SCPb RAI-1 above, the NRC staff noted some differences in the assumptions and conservatisms. For example, in the current LAR, the flow values determined in the ERCW hydraulic analysis are reduced by 5 percent, whereas in the previous analysis, the flow values were reduced by 10 percent. Also, for the CSS HX model (LAR Section 3.2.6.1), the benchmarked PROTO-HX model for the LOCA analysis assumed 10 percent of the tubes were plugged, whereas in the previous LAR model, 5 percent of the tubes were assumed to be plugged (LAR Section 3.2.5.1).

- a. Confirm or clarify whether the methodology developed for the proposed LAR is the same as, or different from, the methodology developed for the previous LAR.
- b. Identify all the differences (including, but not limited to the above examples) in the assumptions, methodology, and acceptance criteria.

c. Provide the reasons for any differences.

**STSB RCI-1**

Regulatory Basis:

Pursuant to 10 CFR 50.36, TSs for operating reactors are required, in part, to include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls.

Issue:

The proposed Condition C states: "Required Action and associated Completion Time of Condition A not met."

Proposed Required Action A.2 states "Verify UHS temperature is  $\leq 78^{\circ}$  F" with a Completion Time of 1 hour.

Required Action A.1 and A.2 are joined by the logical connector "AND." As the proposed TS is currently constructed, if while in Condition A the temperature were to exceed  $78^{\circ}$  F, Required Action A.2 would not be met, and Condition C would be entered. Therefore, the purpose of the second part of the Completion Time for Required Action A.1 it is not clear to the NRC staff .

Request:

Confirm that this is the intent of the proposed TS.