

**Proprietary Information Withhold Under 10 CFR § 2.390
This letter is decontrolled when separated from Enclosure 2**



1101 Market Street, Chattanooga, Tennessee 37402

CNL-24-052

June 27, 2024

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating Licenses Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: Response to Request for Additional Information Regarding Application to Modify the Watts Bar Nuclear Plant, Unit 1 and Unit 2 Technical Specification Surveillance Requirement 3.9.5.1 (WBN-TS-21-14) (EPID L-2024-LLA-0152)

- References:
1. TVA letter to NRC, CNL-23-016, "Application to Modify the Watts Bar Nuclear Plant, Unit 1 and Unit 2 Technical Specification Surveillance Requirement 3.9.5.1 (WBN-TS-21-14)," dated October 30, 2023 (ML23303A095)
 2. TVA letter to NRC, CNL-24-016, "Supplement to Application to Modify the Watts Bar Nuclear Plant, Unit 1 and Unit 2 Technical Specification Surveillance Requirement 3.9.5.1 (WBN-TS-21-14) (EPID L-2024-LLA-0152)," dated January 10, 2024 (ML24010A064)
 3. NRC electronic mail to TVA, "Request for Additional Information Related to License Amendment Request to Revise Residual Heat Removal Flow Rate (EPID L-2024-LLA-0152)," dated May 29, 2024 (ML24155A137)

In References 1 and 2, Tennessee Valley Authority (TVA) submitted a request for an amendment to Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN), Units 1 and 2, respectively. The proposed change revises WBN Units 1 and 2 Technical Specification (TS) Surveillance Requirement 3.9.5.1, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," to revise the current flow rate of 2,500 gallons per minute (gpm) to 2,000 gpm.

In Reference 3, the Nuclear Regulatory Commission issued requests for confirmation information (RCI) and requests for additional information (RAI) and requested that TVA respond by June 28, 2024.

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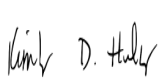
Enclosures 1, 2, and 3 to this submittal provides the responses to the RCI and RAI. Enclosure 2 contains information that Westinghouse Electric Company LLC (Westinghouse) considers to be proprietary in nature pursuant to 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," paragraph (a)(4). Enclosure 3 contains a non-proprietary version of Enclosure 2. Enclosure 4 provides the Westinghouse Application for Withholding Proprietary Information from Public Disclosure CAW-24-034 affidavit supporting this proprietary withholding request. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.390. Accordingly, TVA requests that the information, which is proprietary to Westinghouse, be withheld from public disclosure in accordance with 10 CFR Section 2.390. Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse affidavit should reference CAW-24-034 and should be addressed to Camille T. Zozula, Manager, Regulatory Compliance & Corporate Licensing.

This letter does not change the no significant hazard consideration or the environmental consideration contained in Reference 1. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee State Department of Environment and Conservation.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Stuart L. Rymer, Senior Manager, Fleet Licensing, at slymer@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 27th day of June 2024.

Respectfully,



Digitally signed by Edmondson,
Carla
Date: 2024.06.27 11:23:57 -04'00'

Kimberly D. Hulvey
Director, Nuclear Regulatory Affairs

Enclosures

cc: See Page 3

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Enclosures

1. Response to NRC Requests for Confirmation of Information (RCI) EMIB-RCI-1 and EMIB RCI-2 (Non-Proprietary)
2. Response to EMIB-RCI-2 (Proprietary) and Responses to Requests for Additional Information (RAI) SNSB RAI-1 and SNSB RAI-2 (Proprietary)
3. Response to SNSB RAI-1 and SNSB RAI-2 (Non-Proprietary)
4. Westinghouse Electric Company LLC Application for Withholding Proprietary Information from Public Disclosure (Affidavit CAW-24-034)

cc (Enclosures):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Watts Bar Nuclear Plant
NRC Project Manager – Watts Bar Nuclear Plant
Director, Division of Radiological Health – Tennessee State Department of
Environment and Conservation

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Enclosure 1

Response to NRC Requests for Confirmation of Information (RCI) EMIB-RCI-1 and
EMIB-RCI-2 (Non-Proprietary)

NRC Background

On October 30, 2023 (Agencywide Documents Access and Management System (ADAMS) No. 23303A095), Tennessee Valley Authority (TVA) submitted a license amendment request (LAR) for Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. The proposed amendments would revise Watts Bar, Units 1 and 2, Technical Specification (TS) Surveillance Requirement (SR) 3.9.5.1, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level," to modify the required flow rate of 2500 gallons per minute (gpm) to 2000 gpm.

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an audit of the proprietary documents supporting the LAR made available by the licensee in the Westinghouse electronic reading room (ML24071A098).

The NRC staff is reviewing the request and has identified areas where it needs confirmation of information and additional information to support its review.

Regulatory Requirements

The NRC regulations in 10 CFR 50.36, "Technical specifications," require that each licensee of a nuclear power plant prepare technical specifications as part of its license in accordance with the requirements of this section of the NRC regulations.

The NRC regulations in 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," specify principal design criteria for nuclear power plants to establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety. That is, structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. Watts Bar, Units 1 and 2, were designed to meet the intent of the "Proposed General Design Criteria for Nuclear Power Plant Construction Permits" published in July 1967, with the Watts Bar construction permits issued in January 1973. The Watts Bar Dual-Unit Updated Final Safety Analysis Report (UFSAR) addresses the General Design Criteria (GDC) specified in Appendix A to 10 CFR Part 50. The specific GDC applicable to this LAR are GDC 14, "Reactor coolant pressure boundary," GDC 15, "Reactor coolant system design," and GDC 34, "Residual heat removal."

Requests for Confirmation of Information (RCI)

EMIB-RCI-1

In LAR Enclosure 3 (Westinghouse Letter Report, LTR-SEE-23-NP, Revision 1), when discussing control valve cavitation, it states that the RHR flowrate is reduced during MODE 6 operation by fully closing the RHR bypass flow control valve (HCV-618); and then slowly closing the associated hand control valve (HCV-606 or 607). The report states that cavitation of the reactor coolant could result when the pressure drop across the control valve (HCV-618) increases as flow is reduced. The report notes that severe cavitation could cause excessive wear and vibration in the piping downstream of the control valve. Confirm that this operational recommendation has been addressed in Watts Bar plant procedures for the hand control valve (HCV-606 or 607) to avoid cavitation and its potential consequences when reducing the RHR flowrate.

TVA Response

The TVA operational procedures for the Watts Bar Nuclear Plant (WBN) RHR System (RHRS) only allow the RHR pump to be operated at >2000 gpm or secured. There is no procedural requirement for slowly closing valves FCV-74-28 (Westinghouse ID HCV-606) and FCV-74-16 (Westinghouse ID HCV-607). Rather, TVA operational procedures require slowly throttling open valves FCV-74-28 and FCV-74-16 when placing either or both trains of RHR in service. When securing a train of RHR during Mode 6, valves FCV 74-28 and FCV-74-16 are closed and not throttled to avoid cavitation.

EMIB-RCI-2

LAR Enclosure 3 states that during the first operation with reduced RHR flowrates, the 10-inch check valve 8948 was locally monitored for chatter noise. Furthermore, in LAR Enclosure 2 (Westinghouse Letter Report, LTR-SEE-23-P, Revision 1), the "Check Valve Chattering" section states that [

]]^{a,c,e}

In that system operation and wear can cause changes in check valve performance, confirm that potential changes in the performance of check valves (such as chatter) during reduced RHR flow rates (i.e., 2000 gpm) will be addressed for [

]]^{a,c,e}

TVA Response

TVA confirms that potential changes in the performance of check valves (such as chatter) during reduced RHR flow rates (i.e., 2000 gpm) is addressed for RHRS operation as described in the NRC RCI. It should be noted that TVA operating procedures do not allow operation below 2000 gpm. Additionally, any potential changes in the performance of check valves (such as chatter) would be detected by plant operators as part of their routine walkdowns.

Enclosure 2

Response to EMIB-RCI-2 (Proprietary) and Responses to Requests for Additional Information (RAI) SNSB RAI-1 and SNSB RAI-2 (Proprietary)

Enclosure 3

Response to SNSB RAI-1 and SNSB RAI-2 (Non-Proprietary)

SNSB RAI-1

In LAR Enclosure 2 (Westinghouse Letter Report, LTR-SEE-23-4-P, Revision 1) under the heading “Thermal Stratification,” the last sentence of the first paragraph states:

“Note that increased cavity levels ≥ 23 ft. will increase pressure in the core and DNB margin.”

The report asserts that the higher water level ≥ 23 ft. in the cavity will increase pressure and DNB margin without further detail or elaboration.

Provide the basis for the quoted statement.

TVA Response

The basis for the quoted statement was to leverage the fact that Watts Bar Nuclear Plant (WBN) Technical Specification 3.9.6.1 allows a minimum flow of 2000 gpm with a reactor coolant system (RCS) water level less than 23 feet. The technical basis is derived from first principals that the departure from nucleate boiling (DNB) ratio improves with higher static pressure in the core due to the higher water level 23 feet above the reactor vessel flange.

SNSB RAI-2

In the proprietary enclosure to the LAR (Westinghouse Letter Report, LTR-SEE-23-4-P, Revision 1) under the heading “Thermal Stratification,” the second paragraph states:

[[

]]^{a,c,e} Thus, it is possible for the local coolant temperature to exceed 200 °F and approach the point of nucleate boiling. However, for the worst- case scenario evaluated, it was concluded that DNB would not be a concern at the Watts Bar Units 1 and 2 at a reduced RHR flowrate during MODE 6 operation. The reactor coolant enters the reactor vessel from two cold leg nozzles, passes through the downcomer region and enters the lower plenum region. It is expected that the coolant is adequately mixed from the flow of two branch lines and therefore, the temperature across the core entrance is uniform. Thus, thermal stratification is minimized.

If the local coolant temperature exceeds 200 °F and approaches the point of nucleate boiling in the core, it could lead to both a loss of coolant through boil off which would cause boron to plate out and a reduction in overall boron concentration. The report asserts this is not a concern for reduced flow RHR operation at Watts Bar without providing any further supporting details.

Provide a qualitative explanation of how [[

]]^{a,c,e} As part of this explanation, for the reduced RHR flowrate in Mode 6, describe how the worst-case analyzed condition in which the reactor coolant locally could exceed 200 °F has sufficient departure from nucleate boiling margin.

TVA Response

An imperfect temperature distribution across the core causes localized areas of the core to generate more heat than the average. An increase in local coolant temperature, caused by imperfect core temperature distribution and heat generation, creates a decrease in local fluid density. A decrease in local fluid density results in a pressure drop and the local flow rate increases to compensate for the reduction in pressure. Along the core cross-section, areas of higher velocity and velocity head and lower density will cause local areas of lower static pressure compared to other pressures in cross-section with colder or lower flow. In addition to the mechanical fuel assemblies' intermediate flow mixers, there will be cross flow between local areas of warmer and colder flow through the core.

[[

]]^{a,c,e} The higher subcooling due to the 23-foot water head above the reactor vessel, plus double the cooling flow [[]]^{a,c,e} is empirical justification that the previous DNB analysis and core exit temperature analyzed for mid-loop operation are conservative even with the possibility of some localized flow differences within the fuel assemblies.

Enclosure 4

Westinghouse Electric Company LLC Application for Withholding Proprietary Information
from Public Disclosure (Affidavit CAW-24-034)

Commonwealth of Pennsylvania:

County of Butler:

- (1) I, Zachary Harper, Senior Manager, Licensing, have been specifically delegated and authorized to apply for withholding and execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse).
- (2) I am requesting the proprietary portions of CNL-24-052 Enclosure 2 be withheld from public disclosure under 10 CFR 2.390.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged, or as confidential commercial or financial information.
- (4) Pursuant to 10 CFR 2.390, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse and is not customarily disclosed to the public.
 - (ii) The information sought to be withheld is being transmitted to the Commission in confidence and, to Westinghouse's knowledge, is not available in public sources.
 - (iii) Westinghouse notes that a showing of substantial harm is no longer an applicable criterion for analyzing whether a document should be withheld from public disclosure. Nevertheless, public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar technical evaluation justifications and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

- (5) Westinghouse has policies in place to identify proprietary information. Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:
- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.
 - (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage (e.g., by optimization or improved marketability).
 - (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
 - (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
 - (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
 - (f) It contains patentable ideas, for which patent protection may be desirable.
- (6) The attached documents are bracketed and marked to indicate the bases for withholding. The justification for withholding is indicated in both versions by means of lower-case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower-case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (5)(a) through (f) of this Affidavit.

I declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 6/20/2024

A handwritten signature in black ink, appearing to read "Zachary Harper", written over a horizontal line.

Signed electronically by
Zachary Harper