



1101 Market Street, Chattanooga, Tennessee 37402

CNL-22-085

September 2, 2022

10 CFR 50.55a

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

Sequoyah Nuclear Plant, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket Nos. 50-327 and 50-328

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

**Subject: Response to Request for Additional Information Regarding Sequoyah Nuclear Plant (SQN), Units 1 and 2 and Watts Bar Nuclear Plant (WBN), Units 1 and 2, American Society of Mechanical Engineers Operation and Maintenance Code, Request for Alternatives RP-11 (SQN) and IST-RR-9 (WBN) (EPID L-2022-LLR-0048)**

- Reference:
1. TVA letter to NRC, CNL-22-049, "Sequoyah Nuclear Plant (SQN), Units 1 and 2 and Watts Bar Nuclear Plant (WBN) Units 1 and 2, American Society of Mechanical Engineers Operation and Maintenance Code, Request for Alternatives RP-11 (SQN) and IST-RR-9 (WBN)," dated April 26, 2022 (ML22117A008)
  2. NRC Electronic Mail to TVA, "Request for Additional Information Related to Alternative Requests RP-11 for Sequoyah Nuclear Plant, Units 1 and 2, and IST-RR-9 for Watts Bar Nuclear Plant, Units 1 and 2 (EPID L-2022-LLR-0048)," dated August 11, 2022 (ML22227A027)

In Reference 1, Tennessee Valley Authority (TVA) submitted an alternative request to the inservice testing requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code, Subsection ISTB-3310, "Effect of Pump Replacement, Repair, and Maintenance on Reference Values." This alternative request applies to testing of the motor driven auxiliary feedwater (MDAFW) pumps for the Sequoyah Nuclear Plant (SQN), Units 1 and 2 (alternative request RP-11) and the Watts Bar Nuclear Plant (WBN), Units 1 and 2 (alternative request IST-RR-9).

In Reference 2, the Nuclear Regulatory Commission (NRC) issued a Request for Additional Information (RAI) and requested that TVA respond by September 10, 2022. The enclosure to this submittal provides the TVA response to the RAI.

U.S. Nuclear Regulatory Commission  
CNL-22-085  
Page 2  
September 2, 2022

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to [slymer@tva.gov](mailto:slymer@tva.gov).

Respectfully,



Digitally signed by Rymer, Stuart Loveridge  
Date: 2022.09.02 08:57:02 -04'00'

Stuart L. Rymer  
Director (Acting), Nuclear Regulatory Affairs

Enclosure:

Response to Request for Additional Information Regarding Sequoyah Nuclear Plant, Units 1 and 2 and Watts Bar Nuclear Plant, Units 1 and 2, American Society of Mechanical Engineers Operation and Maintenance Code Request for Alternatives RP-11 (SQN) and IST-RR-9 (WBN)

cc (Enclosure):

NRC Regional Administrator - Region II  
NRC Senior Resident Inspector - Sequoyah Nuclear Plant  
NRC Project Manager - Sequoyah Nuclear Plant  
NRC Senior Resident Inspector - Watts Bar Nuclear Plant  
NRC Project Manager - Watts Bar Nuclear Plant

**Response to Request for Additional Information Regarding  
Sequoyah Nuclear Plant, Units 1 and 2 and Watts Bar Nuclear Plant, Units 1 and 2  
American Society of Mechanical Engineers Operation and Maintenance  
Code Request for Alternatives RP-11 (SQN) and IST-RR-9 (WBN)**

**NRC References:**

1. *Letter from Polickoski, J. T., Tennessee Valley Authority (TVA) to U.S. Nuclear Regulatory Commission (NRC) Document Control Desk, "Sequoyah Nuclear Plant (SQN) Units 1 and 2 and Watts Bar Nuclear Plant (WBN) Units 1 and 2, American Society of Mechanical Engineers Operation and Maintenance Code, Request for Alternatives RP-11 (SQN) and IST-RR-9 (WBN)," April 26, 2022, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22117A008)*
2. *Letter from Beasley, B. G., NRC, to J. W. Shea, TVA, "Sequoyah Nuclear Plant, Units 1 and 2 - Relief Requests RP-01, RP-02, RP-04, RP-06, RP-08, and RV-01 Related to the Inservice Testing Program, Fourth 10-Year Interval (CAC Nos. MF7099 and MF7100)," May 12, 2016 (ML16123A131)*
3. *Letter from Beasley, B. G., NRC, to J. W. Shea, TVA, "Sequoyah Nuclear Plant, Units 1 and 2 - Request for Relief RP-07 for Alternative Inservice Pump Testing at Reference Values (CAC Nos. MF5585 and MF5586)," December 4, 2015 (ML15329A186)*
4. *Letter from Quichocho, J. F., NRC, to J. W. Shea, TVA, "Watts Bar Nuclear Plant, Unit 2 - Review of Inservice Test Program and Preservice Test Program, and Safety Evaluation of Relief Requests IST-RR-1/2/3/4 for the First 10-Year Interval of the Inservice Testing Program," October 21, 2014 (ML14289A222).*
5. *Letter from Beasley, B. G., NRC, to J. W. Shea, TVA, "Watts Bar Nuclear Plant, Unit 1- Updated Inservice Testing Program Relief Request for Pumps and Valves -Third 10-Year Interval (CAC No. MF619)," March 10, 2016 (ML16057A863).*

**NRC Introduction:**

*By letter dated April 26, 2022 (Reference 1), the Tennessee Valley Authority requested an alternative to the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code for Sequoyah Nuclear Plant, Units 1 and 2 (Sequoyah or SQN) and Watts Bar Nuclear Plant, Units 1 and 2 (Watts Bar or WBN). The proposed alternative would allow if repair, replacement, or routine servicing that could affect reference values of a motor-driven auxiliary feedwater (MDAFW) pump is performed during an outage, then initial pump operability for compliance with Technical Specification (TS) Limiting Condition for Operation 3.7.5 and Surveillance Requirement (SR) 3.7.5.2 will be established by performance of a Group A pump test in Modes 4 or 5. Additionally, it would allow if repair, replacement, or routine servicing that could affect reference values of an MDAFW pump is performed during an outage, following the Group A test in Modes 4 or 5, the ASME OM Code, paragraph ISTB-3310 required comprehensive or preservice test will be performed in Mode 1 during power ascension at an appropriate power level within 10 days of reaching Mode 1. If the required comprehensive or preservice test is not performed within these timeframes, the affected unit will enter the required Action Statement of TS 3.7.5. Lastly, it would allow the points at which flow and differential pressure are measured, in accordance with paragraph ISTB-5110, be from pump minimum flow to at least pump design flow. The Group A reference value for flow and differential pressure will be essentially the same point as the minimum flow and differential pressure used as the minimum flow point for the*

## Enclosure

*preservice test. Acceptance criteria will be established in accordance with Table ISTB-5121-1.*

### **NRC Regulatory Basis:**

*The Sequoyah, Units 1 and 2, and Watts Bar, Units 1 and 2, Inservice Testing Programs implement the ASME OM Code as required by Sequoyah, Units 1 and 2, TS 5.5.6, "Inservice Testing Program," and Watts Bar, Units 1 and 2, TS 5.7.2.11, "Inservice Testing Program," respectively, and Title 10 of the Code of Federal Regulations (10 CFR) 50.55a(f). The ASME OM Code Edition and Addenda applicable to the units' current intervals is the 2004 Edition through the 2006 Addenda.*

*Paragraph ISTB-5121, "Group A Test Procedure," of the ASME OM Code states, in part, that Group A tests shall be conducted with the pump operating at a specified reference point. The test parameters shown in Table ISTB-3000-1 shall be determined and recorded as required by this paragraph. Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria," provides pump's Group A test, Group B test, and Comprehensive test acceptable range, alternate range, and required action range for various parameters (i.e., flow, differential pressure, and vibration). Paragraph ISTB-3310, "Effect of Pump Replacement, Repair, and Maintenance on Reference Values," in the ASME OM Code, Subsection ISTB, states:*

*When a reference value or set of values may have been affected by repair, replacement, or routine servicing of a pump, a new reference value or set of values shall be determined in accordance with ISTB-3300, or the previous value reconfirmed by a comprehensive or Group A test run before declaring the pump operable. The Owner shall determine whether the requirements of ISTB-3100, to reestablish reference values, apply. Deviations between the previous and new set of reference values shall be evaluated, and verification that the new values represent acceptable pump operation shall be placed in the record of tests (see ISTB-9000).*

*In accordance with 10 CFR 50.55a(z)(2), the NRC staff may authorize an alternative to an ASME Code requirement if the licensee demonstrates that the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.*

### **NRC Requests:**

#### **EMIB RAI 1**

*Section VI, "Proposed Alternative and Basis for Use," Item 1, states:*

*If repair, replacement, or routine servicing that could affect reference values of an MDAFW pump is performed during an outage, then initial pump operability for compliance with TS LCO 3.7.5 and SR 3.7.5.2 will be established by performance of a Group A pump test in Modes 4 or 5. The Group A pump test will be performed using the fixed resistance pump minimum flow recirculation path in which pump flow is set, and differential pressure and vibration are measured and compared to acceptance criteria established in accordance with ISTB-3300, ISTB-5121, and Table ISTB-5121-1. This acceptance criterion is truncated, if necessary, to ensure the pump minimum design limits are met.*

## Enclosure

*Explain how the current alternative request would be implemented considering the previously authorized requests (References 2 through 5) that apply to the same pumps as this request.*

### TVA Response

The previous NRC-approved alternative requests in References 2 through 5 address vibration acceptance criteria for smooth-running pumps and variance in setting the fixed reference parameter. The referenced alternative requests do not conflict with each other or with the proposed request for alternative to establish initial pump operability using a Group A test until plant conditions support performance of the preservice (five-point curve) test. Therefore, the proposed alternative requests RP-11 (SQN) and IST-RR-9 (WBN) can be implemented concurrently with the previous NRC-approved alternative requests in References 2 through 5 with no adverse consequences.

### **EMIB RAI 2**

*Section V, fourth paragraph states, in part:*

*...the SQN Unit 1 MDAFW pump 1B-B was replaced on May 31, 2021, due to a fire in the inboard pump bearing on MDAFW pump 1B-B, while operating in support of a forced outage with SQN Unit 1 in Mode 3. The replacement pump is a low margin pump and is scheduled to be replaced with an improved efficiency pump during the upcoming SQN Unit 1 Cycle 25 refueling outage (U1R25) scheduled for October 2022....The vendor's qualification process of the replacement pump involves the submittal of a repair plan by the vendor to TVA for review and approval. Once the pump has been repaired or refurbished, the pump is tested to ensure it can meet the TVA design test curve prior to acceptance. A new design test curve has been submitted for this replacement pump to regain operating margin. The vendor will submit a final report once acceptance testing is complete.*

*The alternative request discusses the repair and qualification process for the Sequoyah MDAFW pump 1B-B during the October 2022 refueling outage, including flow testing at the vendor's facility that supports the expectation of operability until the comprehensive test is performed. However, the alternative request will also apply to all repair, replacement, or routine servicing activities on all MDAFW pumps at Sequoyah and Watts Bar, including in-situ repairs. Discuss how TVA provides an expectation of operability for repairs that do not include a flow test at a vendor facility.*

### TVA Response

As discussed in Reference 1, Section VI, "Proposed Alternative and Basis for Use," if repair, replacement, or routine servicing that could affect reference values of an MDAFW pump is performed during an outage, then initial pump operability for compliance with TS Limiting Condition for Operation 3.7.5 and SR 3.7.5.2 will be established by performance of a Group A pump test in Modes 4 or 5. The Group A pump test will be performed using the fixed resistance pump minimum flow recirculation path in which pump flow is set, and differential pressure and vibration are measured and compared to acceptance criteria established in accordance with ISTB-3300, ISTB-5121, and Table ISTB-5121-1. This acceptance criterion is truncated, if necessary, to ensure the pump minimum design limits are met.

## Enclosure

Any in-situ type of repair that would require performance of a preservice (five-point curve) test is limited to major maintenance such as replacement of an impeller, pump casing, or both. If a vendor curve is provided with the replacement parts, then the vendor curve will be used to assess the Group A pump test data and subsequent preservice pump test data. If a vendor curve is not available for the replacement parts, the previous vendor curve, preservice test curve, or design curve will be used to assess the Group A and preservice pump test data.