Browns Ferry Nuclear Plant

Pre-Submittal Meeting for Proposed License Amendment Request to Modify Technical Specification 3.6.1.3 to Create a New Surveillance to Verify the Control Air Supply to the Inboard Main Steam Isolation Valves

December 1, 2025

TVA TENNESSEE VALLEY AUTHORITY

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Introduction

- Tennessee Valley Authority (TVA) is submitting a request for an amendment to Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3.
- This proposed license amendment would modify BFN Technical Specification (TS) 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” regarding a new surveillance requirement (SR). The proposed change would create a new SR 3.6.1.3.11 to verify a minimum 90 psig of control air is supplied to the inboard main steam isolation valves (MSIVs).
- Verification that the air supply header pressure is greater than or equal to 90 psig ensures that the inboard MSIVs are capable of meeting their safety function during a design basis loss-of-coolant accident (LOCA) inside containment.
- The proposed change addresses a non-cited violation (NCV) from a BFN design basis assurance inspection (DBAI) in 2022.

Background

- In 2016, TVA performed a design change to update the BFN design and licensing basis to credit an increased MSIV closure time. The evaluation determined that the inboard MSIVs can perform their design basis closure function within 2 minutes following a LOCA inside primary containment using a closure method of combined air and springs.
- This evaluation was used as a basis for a change to the BFN Updated Final Safety Analysis Report (UFSAR) Amendment 26, which described a 10-second closure time using a closure method of air or springs but did not properly account for increased drywell pressure following a design basis LOCA inside containment.
- The evaluation determined that the increased closure time and closure method did not result in an increase in consequences, and the credible failure mode of the design change (failure of the inboard MSIV to close) was already postulated and not impacted by the UFSAR change. In accordance with 10 CFR 50.59, it was concluded that the activity did not require prior Nuclear Regulatory Commission (NRC) approval.

Background (cont.)

- In 2022, the NRC completed a DBAI at BFN in which inspectors documented a finding of very low safety significance regarding the 10 CFR 50.59 evaluation performed during the 2016 MSIV design change. The finding was determined to be Severity Level IV and was treated as an NCV.
- Inspectors noted that when similar valves require gas pressure to perform their safety function, SRs were specified in the TS to verify adequate pressure for valve operation. The UFSAR description of the inboard MSIVs changed from closure against peak containment pressure using spring force alone to requiring a combination of spring force and accumulator pressure to ensure adequate actuator capability during accident conditions.
- TVA incorrectly concluded that a TS change was not required prior to implementing the MSIV design change. The issue was entered into the TVA Corrective Action Program to develop plans for restoring compliance, and subsequent actions were taken to add a new SR to the BFN TS.

Description of the Proposed Change

- The proposed change revises TS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” and associated Bases, for BFN Units 1, 2, and 3 to add a new Surveillance.
- The proposed SR 3.6.1.3.11 would verify a minimum control air pressure of 90 psig is supplied to the inboard MSIVs to ensure reliable closure under all design basis conditions.
- The proposed SR is performed at a Frequency in accordance with the Surveillance Frequency Control Program (SFCP).
- This proposed change is similar to the existing SR 3.5.1.3 for verification of minimum control air pressure supplied to the automatic depressurization system (ADS) valves for reliable operation.

Description – Proposed SR 3.6.1.3.11

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	Verify inboard MSIV air supply header pressure is ≥ 90 psig.	In accordance with the Surveillance Frequency Control Program

Technical Evaluation

- Each BFN reactor unit has a drywell control air (DWCA) system that provides control air to a header which supplies pneumatic pressure to the MSIVs. Because of the control air requirements of the inboard MSIVs, Seismic Class I accumulators are installed in the drywell to ensure sufficient air in emergencies by providing backup air for closure. In the event of control air failure, accumulator air is trapped by check valves.
- The setpoint of the DWCA pressure switches is 92 psig ± 1.5 psi uncertainty minus 0.5 psi leakage.
- The capability of the inboard MSIVs, under accident conditions, are assessed analytically in a MSIV component level review. This calculation determined that at 90 psig, the inboard MSIVs are capable of performing their design basis closure function within 2 minutes following a LOCA inside primary containment using a closure method of combined air and spring force.

Precedents

- **Surry Power Station, Units 1 and 2, Amendment Nos. 320 and 320 (ML25016A346)** Addition of new SR to verify containment air pressure is within the limits assumed in safety analysis to ensure that a limiting condition for operation (LCO) is met.

- The NRC agreed with Virginia Electric and Power Company that a new SR was required in the Surry TS in accordance with 10 CFR 50.36(c).

Conclusion

- TVA is proposing a change to BFN TS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” to create a new SR 3.6.1.3.11 to verify adequate control air pressure is supplied to the inboard MSIVs to ensure they can perform their design basis closure function in the event of a LOCA inside primary containment.
- During a LOCA inside primary containment, a minimum control air pressure of 90 psig is required to overcome increase drywell pressure to ensure adequate closure of the inboard MSIVs within 2 minutes as described in the BFN safety analysis.
- This change reflects a requirement to ensure an LCO is met as established in 10 CFR 50.36(c). This was not properly identified during the 10 CFR 50.59 process of the 2016 MSIV design change, as determined in a 2022 DBAI at BFN.

Schedule Milestones

- **December 1, 2025** Pre-Submittal Meeting with NRC
- **December 31, 2025** TVA submits LAR to NRC
- **January 2026** Acceptance of LAR for NRC review
- **July 2026** Issuance of BFN amendments
- **November 2026** Implementation of TS amendments at BFN


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