TENNESSEE VALLEY AUTHORITY

Sequoyah Units 1 and 2 Inservice Testing Alternative Request for Thermal Relief Valves

June 12, 2025

Agenda

- Introduction
- Applicable Code Requirement
- Reason for Request
- Proposed Alternative
- Basis for Proposed Alternative
- Maintenance History
- Duration of Proposed Alternative
- Precedents
- Schedule for Submittal

Introduction

- The purpose of the meeting is to provide information for a planned proposed alternative request in accordance with 10 CFR 50.55a(z)(2) for the Sequoyah Nuclear Plant (SQN), Units 1 and 2.
- The scope of this alternative request applies to four SQN Unit 1 thermal relief valves (TRV), one SQN Unit 2 TRV and 1 common (SQN Unit 1 and 2) TRV.
- Basis for 10 CFR 50.55a(z)(2) request is that suitable replacement parts or valves to support rework or replacement cannot be procured by the testing due dates in accordance with the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code Mandatory Appendix I, I-1390, “Test Frequency, Classes 2 and 3 Pressure Relief Devices that are Used for Thermal Relief Application.”
- The duration of the proposed alternative request will be through the remainder of the SQN Unit 2 fourth ten-year IST interval or until successful testing is completed in accordance with Mandatory Appendix I, I-1390 for each of the valves that are subject to this alternative request, whichever is sooner.

Applicable Code Requirement

- ASME OM Code of record for SQN is the 2004 Edition through 2006 Addenda
- ASME OM Code Mandatory Appendix I, I-1390 Test Frequency, Classes 2 and 3 Pressure Relief Devices that are used for Thermal Relief Application states:

  "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

- ASME OM Code Case OMN-20, "Inservice Test Frequency," states "For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test."

ASME OM Code Components Affected

Site/Unit	Component ID	Component Description	Valve Type	OM Code Class	OM Category	I-1390 Due Date
SQN Unit 1	1-RFV-67-1513	CCS HX 1A1 PRESSURE RELIEF	TRV	3	C	9/22/2025
SQN Units 1 and 2	0-VLV-67-1514	CCS HX OB2 OUTLET PRESS RELIEF	TRV	3	C	9/20/2025
SQN Unit 1	1-RFV-67-1514	CCS HX 1A2 PRESSURE RELIEF	TRV	3	C	9/22/2025
SQN Unit 2	2-VLV-67-1514	CCS HX 2A2 OUTLET PRESS RELIEF VLV	TRV	3	C	9/22/2025
SQN Unit 1	1-RFV-72-40[1]	RHR SPRAY HDR A RELIEF VALVE	TRV	2	A/C	9/18/2025
SQN Unit 1	1-RFV-72-41[1]	RHR SPRAY HDR B RELIEF VALVE	TRV	2	A/C	9/18/2025

1. Can only be tested during a refueling outage

Reason for Request

- Limited availability of replacement TRV repair parts to support the required Inservice Testing by their scheduled due dates.
- Pursuant to 10 CFR 50.55a(z)(2), TVA is providing this proposed alternative to testing the selected relief valves due to a hardship without a compensating increase in the level of quality and safety.
- Additional information to support this request is provided in the Basis for Proposed Alternative.

Proposed Alternative

- Two valves are currently scheduled for testing in the SQN Unit 1 Cycle 27 refueling outage (U2R27) in October 2025 (i.e., valves 1-RFV-72-40 and 1-RFV-72 41). These valves have a due date of September 18, 2025, for their next ASME OM Code, Mandatory Appendix I, I-1390 test, but these cannot be tested online.
- In the event a forced outage occurs prior to U2R27, TVA will evaluate the ability to install replacement valves based on plant conditions, outage scope, and duration.
- The remaining population of four valves (two on SQN Unit 1, one on SQN Unit 2, and one common) are awaiting an available spare and a work window to perform the work. Because suitable replacement parts or valves to support rework or replacement cannot be procured by September 22, 2025, for their next ASME OM Code, Mandatory Appendix I, I-1390 test, TVA proposes to complete the Mandatory Appendix I, I-1390 testing of the identified TRV as stated in the Duration of Proposed Alternative.

Proposed Alternative (cont'd)

- Until the required testing is completed, TVA has issued a Standing Order to update clearance software eSOMS to add a note to all the relevant valves to ensure a vent path is established. The affected systems are Essential Raw Cooling Water (ERCW) (System 67 valves) and Containment Spray (CS) (System 72 valves).
- No changes are required to the Technical Specifications to implement the proposed alternative.

Basis for Proposed Alternative

- In 2015, SQN implemented a design change to the plant TRV. This was performed to switch from an obsolete design to a new series design. With this design change being implemented at the same general time (March 2015), it has led to a large quantity of the valves reaching the end of the 10-year test to test interval (mandated by I-1390) at the same time.
- Section I-1390 requirements can be met by swapping the installed valves with a pre-tested spare or by removing the installed valve, set point testing, and reinstalling. The option to utilize a pre-tested spare is hindered by TVA stocking levels and manufacturing lead times.
- The relief valve vendor does not stock these designs and has to manufacture a valve for every purchase order. Due to reasons beyond TVA's and the vendor's control, delivery dates continually slipped, forcing WOs to be pushed in the schedule.

Basis for Proposed Alternative (cont'd)

- Current stocking levels have one spare valve in stock but under Quality Assurance (QA) hold. This QA hold renders the valve unusable until the valve can be appropriately refurbished. These QA holds are due to the service life expiration of an O-ring on the cap plug.
- Instead of shipping these valves back to the vendor, TVA has chosen to order replacement O-rings and perform the refurbishment in house. This will allow for quicker refurbishment time and establishing an available spare to perform set point testing until spares on order arrive.

Basis for Proposed Alternative (cont'd)

- Removing the currently installed valve for set point verification and reinstalling is an option but is hampered by internal OE
    - Due to the procurement issues previously discussed, Sequoyah attempted to proceed with the testing of installed valves during a previous refuel outage. While lift set point testing was satisfactory, post test seat leakage did not pass the 3 cc/hr/in requirement.
    - Repair efforts did not result in improved leakage rates and without a successful repair strategy nor an available spare, valves were reinstalled in the plant with known leakage.
    - The leakage was deemed acceptable for the valve application, but corrective actions required valve replacement in the subsequent outage.
    - This requirement further exacerbated the ability to obtain adequate spare stock for future replacements.
    - Lessons learned from this OE, have resulted in Sequoyah no longer testing installed valves, unless a spare is available as a contingency option.
- Due to the potential for post seat leakage and no suitable replacements being available, implementing the OM Code requirement to test the valves has the potential to cause an extended outage of the CCS and ERCW systems and result in a hardship without a compensating increase in the level of quality and safety.

Maintenance History

Component ID	Leakage History	Actions Taken
1-RFV-67-1513	None since installation in 2015	N/A
0-VLV-67-1514	None since installation in 2015	N/A
1-RFV-67-1514	None since installation in 2015	N/A
2-VLV-67-1514	None since installation in 2015	N/A
1-RFV-72-40	None	Condition report issued for incorrect part issue, not 10 CFR 21 reportable.
1-RFV-72-41	None since installation in 2015	N/A

Duration of Proposed Alternative

- The duration of the proposed alternative request will be through the remainder of the SQN Unit 2 fourth ten-year IST interval or until successful testing is completed in accordance with Mandatory Appendix I, I-1390 for each of the valves that are subject to this alternative request, whichever is sooner. If TVA is able to complete testing of any of the subject valves prior to NRC approving this alternative request, then TVA will supplement this alternative request accordingly.
- The SQN Unit 2 fourth ten-year IST interval is currently scheduled to end on June 30, 2026, but may be extended in accordance with ASME OM code 2004 Edition, 2006 Addenda, Section ISTA-3120(c).

Precedents

- The following precedents are similar to the proposed alternative request in that they approved deferring the test or replacement of thermal relieve devices similar to those inservice at SQN.
  - Comanche Peak Nuclear Power Plant, Unit Nos. 1 and 2, “Authorization and Safety Evaluation for Proposed Alternative RV-1A (EPID-L-2024-LLR-0079),” dated April 25,2025 (ML25111A082)
  - Comanche Peak Nuclear Power Plant, Unit Nos. 1 and 2, “Authorization and Safety Evaluation for Proposed Alternative RV-1 (EPID-L-2023-LLR-0019),” dated July 27, 2023 (ML23198A321)
- In these precedents the NRC authorized an alternative request to defer the inservice tests of thermal relief valves within the Comanche Peak IST program. The approved duration was for the remainder of the third 10-year IST program interval until the subsequent scheduled refueling outages where the subject valves would be reworked or replaced. The basis and duration for the identified precedent alternative request is similar to that being presented herein for SQN.

Schedule for Submittal

- TVA plans to submit request for alternative to NRC by June 30, 2025.

- Request NRC approval by September 12, 2025.


TVA
TENNESSEE
VALLEY
AUTHORITY