



Sequoyah Unit 1 Inservice Inspection Alternative Request Regarding Containment Spray Heat Exchanger

August 28, 2025



Agenda

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Introduction

- Purpose is to provide information for a planned alternative request according to 10 CFR 50.55a(z)(2) for the Sequoyah Nuclear Plant (SQN) Unit 1 containment spray heat exchanger (1A CSHX) to be installed in October of 2025.
- SQN is requesting alternative from the ASME Code Section XI IWA-4221 requirement that replacement items must meet Construction Code and IWA-4222(b) administrative requirements.
- Fabricator of replacement SQN 1A CSHX failed to renew ASME Section III certification on time to support October 2025 installation
- Basis for 10 CFR 50.55a(z)(2) alternative request is that construction of the replacement SQN 1A CSHX meets the technical requirements of IWA-4221
- Duration of the proposed ASME Section XI alternative is until the end of life for the replacement SQN 1A CSHX.

Applicable Code Requirements

- Applicable ASME Section XI of the Boiler and Pressure Vessel Code for the SQN Fifth ISI Interval starting September 4, 2025 is the 2019 Edition
- ASME Code IWA-4221, Construction Code and Owner's Requirements, Subsection (b)(1):

“(b) An item to be used for repair/replacement activities shall meet the Construction Code specified in accordance with (1)....”

“(1) When replacing an existing item, the new item shall meet the Construction Code to which the original item was constructed.”

- The IWA-4221 requirement is applicable since the original CSHX was constructed to ASME Code Section VIII (shell side) and ASME Section III (tube side).
- ASME Code IWA-4222, Reconciliation of Code and Owner's Requirements, Subsection (b):

“(b) The administrative requirements of either the Construction Code of the item being replaced or the Construction Code of the item to be used for replacement shall be met.”

Reason for Request

- The SQN 1A CSHX was replaced during the spring 2015 refueling outage.
 - In the spring of 2024, a maintenance activity resulted in the plugging and removal of 127 tubes from service.
 - A revised performance analysis confirmed the heat exchanger still meets operational requirements.
- SQN plans to replace the 1A CSHX again during the October 2025 refueling outage to regain safety margin and improve long-term reliability.
- On August 2, 2025, the fabricator informed TVA of minor deficiencies identified during an ASME Section III audit, resulting in the non-renewal of their certification.
 - Without the ASME Code Section III certification, the fabricator cannot certify and deliver the replacement CSHX for the October 2025 installation outage.
- TVA has explored alternate solutions but faces significant engineering and implementation challenges that do not support installation in October of 2025.

Reason for Request (contd.)

- The existing SQN 1A CSHX meets design requirements and is acceptable for continued service, however replacement would restore safety margin and improve long-term reliability.
- The CSHX replacement project is linked to another SQN project replacing portions of the Essential Raw Cooling Water (ERCW) piping which is also an improvement to plant safety.
- Deferring the 1A CSHX replacement would require significant re-analysis and revision to the engineering change package.
- Therefore, TVA requests alternative from the IWA-4221 and IWA-4222(b) requirements to allow installation of the fully fabricated replacement 1A CSHX.

Proposed Alternative

- SQN proposes to install the newly fabricated replacement 1A CSHX that meets the following requirements:
 1. The tube side of the SQN Unit 1 replacement 1A CSHX has been designed and fabricated to meet the technical requirements of ASME Code Section III but is not stamped by the fabricator. The tube side portion of the 1A CSHX heat exchanger will be certified by the fabricator to meet the material, design, fabrication, inspection, and testing requirements of ASME Code Section III Division 1 Class 2 in accordance with the manufacturer's 10 CFR Part 50 Appendix B quality assurance program.
 2. The shell side of the SQN Unit 1 replacement 1A CSHX has been designed and fabricated in accordance with ASME Section VIII and will be stamped with the fabricator's ASME Section VIII certification. Therefore, the shell side of the 1A CSHX is not within the scope of this request.

Basis and Duration for Proposed Alternative

- The proposed alternative meets the technical requirements of ASME IWA-4221 as it pertains to the SQN 1A CSHX.
 - The replacement component meets material, design, fabrication, inspection, and testing requirements of the ASME Code Section III Division 1 Class 2.
 - Fabrication has been in accordance with a 10 CFR Part 50 Appendix B quality assurance program.
- Compliance with the specified Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety according to 10 CFR 50.55a(z)(2).
- Duration of the proposed ASME Section XI alternative is until the end of life for the replacement SQN 1A CSHX.

Precedents

- Surry Power Station Units 1 and 2 ASME Section XI Relief Request regarding Heat Exchanger Replacements
 - ML18150A257 Surry Request for Relief dated July 23, 1987
 - ML18152A595 Supplement dated November 13, 1987
 - ML012670085 NRC Safety Evaluation dated February 25, 1988
- Public Service Electric and Gas (PSEG) Company Hope Creek Generating Station ASME Section XI Relief Request regarding Service Water Spray Water Pumps
 - ML20138B205 PSEG Request for Relief dated October 10, 1985
 - ML20137N656 NRC Safety Evaluation dated November 21, 1985
- Each of these precedents are requests pertaining to the ASME Code certification requirements of replacement components which have been reviewed and approved by the NRC.

Schedule for Submittal

- TVA plans to submit request for alternative to NRC by September 8, 2025.
- Request NRC verbal approval by September 18, 2025.



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