



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37579

October 11, 1994

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

Gentlemen:

In the Matter of
Tennessee Valley Authority

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Docket Nos. 50-327
50-328

SEQUOYAH NUCLEAR PLANT (SQN) - AUTHORIZATION TO USE AMERICAN
SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND PRESSURE VESSEL
(B&PV) CODE CASE N-416-1

Pursuant to 10 CFR 50.55a(g)(5), TVA has determined that conformance with a pressure test requirement from Section XI of the ASME Code (1980 Edition, Winter 1981 Addenda) is impractical for SQN Units 1 and 2.

TVA requests relief from the ASME code requirement for performing hydrostatic pressure tests after repairs by welding, or the installation of replacement items by welding, on the pressure retaining boundary of Class 1, 2, and 3 components. TVA proposes to utilize the alternative requirements of Code Case N-416-1, "Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding," for repair and replacement activities on specified systems with Class 1, 2, and 3 components. In addition to the alternative requirements from Code Case N-416-1, TVA will incorporate into SQN's Repair and Replacement Program, additional nondestructive examinations (NDE) requirements on Class 3 butt welds.

The alternative testing and NDE requirements in Code Case N-416-1 are supported by the recent approval by the Board of Nuclear Codes and Standards on May 18, 1994. The additional NDE requirement for Class 3 butt welds is based on the NRC staff's position for performing additional surface examination on the root (pass) layer for Class 3 butt welds. TVA considers the alternative requirements in ASME Code Case N-416-1, and the additional NDE for Class 3 butt welds to provide an acceptable level of quality and safety in lieu of a hydrostatic pressure test.

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TVA's request for relief is similar to a letter of request from Commonwealth Edison for its Dresden Nuclear Power Station that was approved by NRC in a safety evaluation report dated May 25, 1994.

Enclosure 1 contains TVA's Request for Relief (RR-1). Enclosure 2 contains TVA's commitment for incorporating additional requirements into SQN's Repair and Replacement Program. NRC review and approval is requested before October 1, 1995, in order to support completion of SQN's first 10-year inservice inspection interval for both units. The first 10-year interval is scheduled to end in December 1995 for both units.

For further information concerning this issue, please contact D. V. Goodin at (615) 843-7734.

Sincerely,



O. J. Zeringue
Acting Site Vice President

Enclosures

cc (Enclosures):

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ENCLOSURE 1

RELIEF REQUEST-1

(RR-1)

Units: 1 & 2

Components: All Class 1, 2, and 3 pressure retaining components subject to hydrostatic testing in accordance with IWA-4700.

Systems: Main steam, feedwater, auxiliary feedwater, chemical volume and control, residual heat removal, safety injection, containment spray, reactor coolant, primary water, waste disposal, fire protection, essential raw cooling water, fuel pool cooling, demineralized water, component cooling, sodium hypochlorite, air conditioning chilled water, and sampling.

Classes: 1, 2, and 3

Code

References: IWA-4400(a) and IWA-4600

Code

Requirements: IWA-4400(a) states: "After repairs by welding on the pressure retaining boundary, a system pressure test shall be performed in accordance with IWA-5000."

IWA-4600(a) states: "The rules and requirements of this Article shall apply to the attaching of replacements (as defined in IWA-7110) to the system where such attachment is by welding."

Proposed

Alternative: As an alternate to the existing Section XI requirements, SQN will adopt the provisions of Code Case N-416-1, as approved by the Board of Nuclear Codes and Standards (BNCS), along with the following additional nondestructive examinations (NDE) requirements.

When performing repairs by welding, or the installation of replacement items by welding, on the pressure retaining boundary of Class 3 components, NDE shall be performed in accordance with the methods and acceptance criteria of Subsection ND of the 1992 Edition of Section III. In addition, when the surface examination method is used in accordance with ND-5222 for a butt weld, an additional surface examination shall be performed on the root (pass) layer.

Basis for
the Proposed
Alternative:

Elevated pressure hydrostatic tests are difficult to perform and often represent a true hardship. Some of the difficulties associated with elevated pressure testing include the following:

- Hydrostatic testing often requires complicated or abnormal valve line-ups in order to properly vent, fill, and isolate the components requiring testing.
- Relief valves with setpoints lower than the hydrostatic test pressure must be gagged or removed and blind flanged. This process requires the draining and refilling of the system.
- Valves that are not normally used for isolation (e.g., normally open pump discharge valves) are often required to provide pressure isolation for an elevated pressure hydrostatic test. These valves frequently require time consuming seal maintenance in order to allow for pressurization.
- The radiation exposure required to perform a hydrostatic pressure test is high in comparison to a system leakage test. The amount of time required to prepare the volume for hydrostatic pressure testing (i.e., installing relief valve gags, performing appropriate valve line-ups, etc.) is significantly large.

The difficulties encountered in performing a hydrostatic pressure test are prohibitive when weighed against the benefits. Industry experience, which is supported by SQN's experience, shows that most wall leakage is detected during system operation as opposed to during elevated pressure tests.

Little benefit is gained from the added challenge to the piping system provided by an elevated pressure hydrostatic test (when compared to a system leakage test), especially when one considers that the piping stress experienced during a hydrostatic test does not include the stresses affiliated with the thermal growth and dynamic loading for design basis events.

The acceptability of performing nominal operating pressure tests, in lieu of hydrostatic tests, is supported by the recent approval by the BNCS of Code Case N-416-1, "Alternative Pressure Test Requirements for Welded Repairs or Installation of Replacement Items by Welding." This code case allows a system leakage test at nominal operating pressure and temperature (in accordance with IWA-5000 of the 1992 Edition of Section XI) to be used in lieu of a hydrostatic test, provided that NDE of the weld(s) is performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1992 Edition of Section III.

Based on the above, TVA requests relief from the American Society of Mechanical Engineers Section XI requirements for performing elevated pressure hydrostatic tests after repairs by welding, or the installation of replacement items by welding, on the pressure retaining boundary of Class 1, 2, and 3 components.

Applicable
Time Period:

Relief is requested for the first 10-year interval of the In-Service Inspection Program for SQN Units 1 and 2, which is scheduled to end in December 1995.

ENCLOSURE 2

TVA COMMITMENTS

1. TVA will revise SQN's Repair and Replacement Program (Site Standard Practice [SSP] 6.9, "Repair/Replacement of ASME Section XI Components") to allow the use of ASME Code Case N-416-1 for repairs and replacements by welding within three months of NRC approval of Relief Request RR-1.
2. TVA will revise SQN's Site Welding Program (SSP-7.50, "Welding, Brazing, and Soldering") to address the nondestructive examination (NDE) requirements of American Society of Mechanical Engineers (ASME) Code Case N-416-1 and the additional NDE for Class 3 butt welds within three months of NRC approval of Relief Request RR-1.
3. TVA will revise SQN's Site ASME, Section XI, Pressure Test Program (SSP-8.5, "ASME Section XI Pressure Test Program") to address the alternative pressure test requirements allowed by ASME Code Case N-416-1 within three months of NRC approval of Relief Request RR-1.