TVA

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August 6, 1992

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - TEMPORARY REQUEST FOR RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) CODE FOR CLASS 3 PIPING LEAK ON THE ESSENTIAL RAW COOLING WATER (ERCW) SYSTEM

Reference: TVA letter to NRC dated December 2, 1991, "Sequoyah Nuclear Plant (SQN) - Temporary Relief From American Society of Mechanical Engineers (ASME) Code for Weld Leakage on Component Cooling System (CCS) Heat Exchangers (HX'S) OB2 and 2A1"

This letter provides a temporary request for relief from the ASME code regarding repair or replacement of a short section of 2-inch-diameter piping in the ERCW system. At the present time, a through-wall flaw exists in the ASME, Code Class 3 piping. This relief request is being submitted under 10 CFR 50.55(a)(g)(5)(iii) and is in accordance with guidance provided by NRC staff as outlined in the above reference.

The leak is located in a section of piping on the discharge side of Thermal Relief Valve 67-539A (refer to SQN Updated Final Safety Analysis Report, Figure 9.2.2-2). The relief valve provides overpressure protection (from thermal expansion) for the ERCW side (shell side) of the 1A containment spray (CS) heat exchanger (HX) when the HX is isolated. TVA evaluated the operability of the ERCW and CS systems with regard to ERCW flow-rate requirements, flooding, overpressure protection of the CS HX, and the effects of spray on adjacent equipment. TVA's evaluation indicates that the ERCW and CS systems will perform their design basis functions. In addition, TVA evaluated the structural integrity of the piping in accordance with NRC guidance provided in Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping." TVA's structural-integrity evaluation indicated that the flaw satisfied the criteria of the through-wall flaw approach in GL 90-05.

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Until repair or replacement is performed, an inspection of the piping will be conducted on a weekly basis to assess structural integrity and to ensure that there is no further degradation. In addition, ultrasonic testing will be performed at least once every three months to assess the rate of degradation. It should be noted that the affected section of piping is located in a common ERCW discharge header that cannot be isolated without affecting operability of safety equipment on both units. Both units would be required to be shut down to allow isolation of the header without affecting equipment operability. TVA's outage schedule for SQN does not currently contain a dual unit outage; consequently, the repair or replacement of this piping must be accomplished while at least one unit is operational and the piping remains pressurized. At this time, TVA is evaluating several repair or replacement techniques. TVA will complete the repair or replacement before start-up from the Unit 1 Cycle 6 refueling outage.

Enclosure 1 provides TVA's request for relief from the ASME, Section XI, code. Enclosure 2 contains TVA commitments associated with this submittal.

As an additional note, it is our understanding that based upon recent conversations with NRC staff, temporary relief requests are no longer needed for coolers whose degraded coils form an ASME, Code Class 3 boundary. Accordingly, TVA will cease submission of temporary relief requests for degraded cooler coils.

Please direct any questions concerning this issue to D. V. Goodin at (615) 843-7734.

Sincerely,

J. L. Wilson

Enclosures
cc: See Page 3

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ENCLOSURE 1
SEQUOYAH NUCLEAR PLANT (SQN)
REQUEST FOR RELIEF - ESSENTIAL RAW COOLING WATER (ERCW)
RELIEF VALVE 67-539A DISCHARGE PIPING

UNIT: SQN Units 1 and 2

COMPONENTS: Two-inch-diameter, Schedule 40, carbon-steel piping on the discharge side of Relief Valve 67-539A

SYSTEM: ERCW

ASME CODE CLASS: 3

FUNCTION: Relief Valve 67-539A provides thermal protection to the ERCW side of containment spray (CS) heat exchanger (HX) 1A when the CS HX is isolated. Flow Control Valve (FCV) 67-539A is located in a small section of piping that leads from the upstream side of FCV-67-126 to the downsteam side of FCV-67-126. FCV-67-126 is the ERCW discharge isolation valve for CS HX 1A.

IMPRACTICAL CODE REQUIREMENTS: When an American Society of Mechanical Engineers (ASME), Section XI, code repair or replacement is performed, it is required to be conducted in accordance with ASME, Section XI, IWA-4000 or IWA-7000 respectively, to restore structural integrity to the original design requirements. TVA's schedule for repair or replacement is during the Unit 1 Cycle 6 refueling outage. Temporary relief from the code requirement is requested until that time.

BACKGROUND: On June 2, 1992, leakage was observed by Maintenance personnel on a small section of 2-inch ERCW piping downstream of Relief Valve 67-539A (see SQN Final Safety Analysis Report, Figure 9.2.2-2). The size of the opening in the pipe is approximately 1/2 inch by 1/4 inch. Upon discovery of the leak, TVA evaluated the operability of the ERCW system and CS in accordance with Technical Specifications 3/4.7.4 and 3/4.6.2, respectively. Since the leak is located on a section of piping that is connected to SQN's ERCW main discharge header (1A), the loss of ERCW from the leak does not affect the supply of cooling water to any safety-related equipment. In addition, the function of the thermal relief valve (67-539A) associated with protection of the CS HX is not affected.

The main discharge header empties into a discharge channel out in the yard that is at atmospheric pressure. Consequently, the system pressure at the leakage point is five-to-ten pounds per square inch above atmospheric pressure (static water head between the discharge channel and the leak). Water is expelled intermittently from the leak (the total estimated leakage is less than 1/2 gallon per minute). Since the internal pipe pressure at the leakage point is sufficiently small, there are no adverse effects to surrounding equipment because of spray. A funnel and a drain hose have been installed to route leakage to a nearby floor drain. Based on the above discussion, TVA determined that operability of the RBCW system and CS is not impaired.

An evaluation was performed in accordance with NRC Generic Letter 90-05 (through-wall flaw method) to address the structural integrity of the piping with the leakage present. The results of this evaluation indicate that the calculated-stress intensity factor "K" of 20.33 (1,000 pounds per square inch $[ksi][in]^{0.5}$) was less than the 35 $ksi(in)^{0.5}$ criteria for ferritic steel.

The preliminary root cause for the piping degradation is considered to be microbiologically induced corrosion. This cannot be accurately assessed until the piping is physically removed and examined. Ultrasonic testing (UT) was performed to assess overall degradation of the affected piping. UT of the two-inch-diameter, Schedule 40 piping (nominal-wall thickness of 0.154 inch) indicated the pipe wall to be between 0.100 to 0.150 inch thick. Two locations along the pipe were found to be 0.070 inch thick and one location 0.080 inch thick. A single location adjacent to the leak was found to be 0.050 inch thick.

PROPOSED TEMPORARY NONCODE REPAIR:

A temporary noncode repair consisting of a sheetmetal clamp with a rubber gasket has been employed to limit leakage. This temporary repair has been evaluated for effects on the system because of deadweight and seismic forces and proved to have no effect on the system. The funnel and drain hose will remain in place to capture and control any leakage by the gasket.

ALTERNATIVE REQUIREMENT: TVA will continue to operate with a temporary noncode repair until a code repair or replacement of the pipe can be performed. A walkdown will be performed at least once a week to ensure structural integrity is maintained. UT will also be performed at least once every three months to assess the piping degradation rate. Based upon the weekly walkdowns and UT examinations, an engineering evaluation will be performed to determine if further remedial measures or corrective actions are needed.

ENCLOSURE 2

COMMITMENTS

1. TVA will repair or replace the affected essential raw cooling water system piping before start-up from the Unit 1 Cycle 6 refueling outage.

2. A walkdown of the affected piping will be performed at least once a week to ensure structural integrity is maintained. Weekly monitoring will continue until repair or replacement is complete.

3. Ultrasonic testing (UT) will be performed at least once every three months to assess the rate of degradation. This testing will continue until repair or replacement is complete.

4. An engineering evaluation will be performed once every three months following the UT to determine if further remedial measures or corrective actions are needed.