Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379

J. L. Wilson
Vice President, Sequoyah Nuclear Plant

March 23, 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) - REQUEST FOR RELIEF FROM THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME), SECTION XI, HYDROSTATIC PRESSURE TEST REQUIREMENTS

Enclosed is a request for relief from the ASME, Section XI, hydrostatic test requirements involving the main feedwater system for Units 1 and 2. This relief is necessary because of the replacement of feedwater nozzle transition pieces on the steam generators (S/Gs). During the forced shutdown of Unit 1 on March 19, 1992, for resolution of ice condenser lower-inlet door impairments, leakage from insulation on the feedwater line to S/G No. 3 was observed and increased leakage into the reactor building pocket sump was detected. The source of the leakage was subsequently determined to be a through-wall crack in the feedwater nozzle transition piece to S/G No. 3. Replacement of the feedwater transition piece is necessary to reestablish the structural integrity of the feedwater system.

The associated failure analysis is still ongoing and applicability to the remaining Units 1 and 2 transition pieces is under evaluation. In recognition of the potential for further replacements, this relief is being requested for all eight transition pieces for both units.

The nozzle transition piece is a 16-inch, outside-diameter code Class 2 component. The replacement of these transition pieces will require cutting and removing the transition piece and adjacent 16-inch elbow and the remaking of three 16-inch butt welds. TVA's ASME, Section XI, program requires that the new welds be subjected to a hydrostatic pressure test before returning the system to service. The location of these welds in the feedwater system is immediately upstream of the S/G nozzles.

A047 1/1

Because the new welds in the feedwater piping are not isolable from the S/Gs, a hydrostatic pressure test of the S/G and the main steam piping up to the main steam isolation valves would be required to comply with the requirements of Section XI of the ASME code (1980 Edition, Winter 1981 Addenda, IWA-4400(a). Pursuant to 10 CFR 50.55a(a)(3) and 10 CFR 50.55a(g)(5)(iii), TVA has determined that conformance to the code would be impractical and result in undue hardship without a compensating increase in the level of quality and safety.

Enclosure 1 contains a description of the maintenance activity. Enclosure 2 contains the request for relief.

TVA has considered the use of code Case N416 in this matter. However, TVA anticipates incorporating code Case N498 into SQN's Section XI program upon its approval by NRC. TVA recognizes that the incorporation of N498 into SQN's Section XI program will preempt the use of N416.

TVA requests expeditious NRC review of this relief request so that alternatives may be considered should the relief request be denied.

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

Sincerely,

J. L. Wilson

Enclosures
cc (Enclosures):
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ENCLOSURE 1

BACKGROUND: On March 19, 1992, with the unit operating in hot standby, TVA was performing an inspection of the Unit 1 ice condenser lower-plenum-inlet doors when leakage from the insulation on the feedwater line to Steam Generator (S/G) No. 3 was observed. Increased leakage to the reactor building pocket sump was also noted. Following further evaluation of the situation, the unit was taken to cold shutdown and an investigation was started to determine the exact location of the leak. Scaffolding and lighting were installed and insulation removed at the S/G No. 3 nozzle-to-feedwater joint. A through-wall crack approximately two inches in length on the outside diameter (seven inches in length on the inside diameter) was identified through radiographic examination. Note that a visual examination had indicated a one-inch crack on the outside diameter. The attached figure indicates the affected area.

TVA is in the process of conducting further nondestructive examination and evaluation of the flaw, along with preparations for removal and replacement of affected piping. TVA is also planning to perform similar examinations on the remaining Unit 1 S/Gs and all of the Unit 2 S/Gs. A detailed failure analysis and investigation are ongoing.

MAINTENANCE ACTIVITY: Once nondestructive examinations are completed and the area of the flaw or potential flaws is bounded, TVA will remove the affected section of material from the system. As appropriate, a metallurgical examination will be performed on the flawed material to determine the mode of failure. TVA will perform replacement of the material in accordance with American Society of Mechanical Engineers, Section XI, IWA-7000. The replacement transition piece is composed of ASME, SA-508 alloy steel and the replacement elbow is carbon steel conforming to ASME, SA-420. Both the elbow-to-transition piece and the transition piece-to-nozzle welds will be Gas Tungsten/Shielded Metal Arc welds in accordance with ASME, Section IX. The nozzle weld will be P-3 to P-3 utilizing SFA 5.28 Class ER80S-D2 electrodes for the root and hot pass and SFA 5.5, Class E8018-C3 for the remainder. The elbow-to-transition piece weld will be P-1 to P-3 utilizing SFA 5.28 Class ER80S-D2 electrode for the root and hot pass and SFA 5.5 Class E8018-C3 electrode for the remainder. The elbow to existing pipe weld will similarly use the GT-SM welding process and employ SFA 5.18 Class E70S-3 electrodes for the root and hot pass, and SFA 5.1 Class E7018 electrodes for the remainder.

NOTES:

1. FOR UNIT 2 DWG SEE ISI-0350-A
2. DIMENSIONS ARE FOR INFORMATION ONLY.

REFERENCE DRAWINGS
7B17-4

ASME CC-2 (EQUIVALENT)

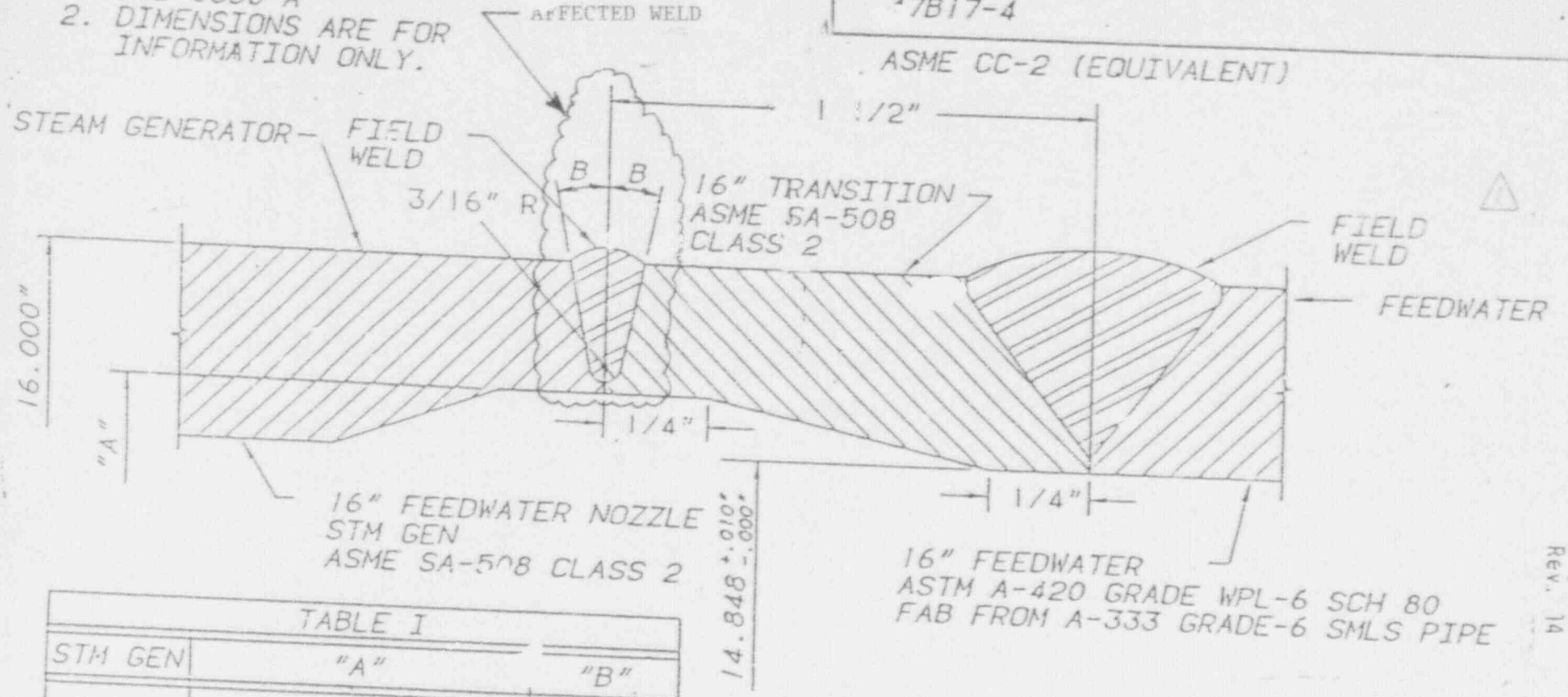

TABLE I		
STM GEN	"A"	"B"
1-1	14.842± .010 .000	23°
1-2	14.842± .010 .000	23°-30'
1-3	14.842± .010 .000	23°
1-4	14.842± .010 .000	23°

REV.	BY	DATE	DESCRIPTION	CK'D	SUP	APP.
1	RPG	8-6-88	ADDED TABLE, NOTES, REF DWGS., MADE CAD AND UNIT SPECIFIC	RCC	MRA	

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT
UNIT 1
STEAM GENERATOR/FEEDWATER TRANSITION SPOOL PIECE

DRAWN:	SUBMITTED	APPROVED	SCALE (NTS)
DATE:	DATE:	DATE:	SHEET 1 OF 1 SHEET(S)
CHECKED:			DRAWING NO. MSG-0005-A REV. 1
DATE:			

FOR ORIGINAL SIGNATURES AND PREVIOUS REV. INFO SEE 'ORIGINAL'.

REV.	1
HARDWARE	IBM 5085
SOFTWARE	CADAM
FLOPPY DISC	N/A

SI-114.1
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Rev. 14

SQUIS

ENCLOSURE 2

Request for Relief

Unit:	1 and 2
System:	Main Feedwater System
TVA Drawing:	47W803-1
Component:	Steam generator (S/G) nozzle transition pieces
Class:	American Society of Mechanical Engineers (ASME), Code Class 2
Function:	Provides feedwater to the S/G
Code Requirement:	IWA-4400(a), 1980 Edition, Winter 1981 Addenda of the ASME Boiler and Pressure Vessel Code, Section XI, "After repairs by welding on the pressure retaining boundary, a system hydrostatic test shall be performed in accordance with IWA-5000."

Basis for Relief: The replacement of the S/G nozzle transition pieces involves piping and welds that cannot be isolated from the S/G and the main steam piping. Therefore, a hydrostatic pressure test of the entire S/G would be required to comply with the code requirement. This presents an undue hardship for the following reasons:

1. The performance of a hydrostatic test on the new installation welds for replacement of the nozzle transition pieces and elbow piping requires the pressurization of the feedwater lines from the feedwater check valves, through the entire secondary side of the S/G and the main steam line up to the main steam isolation valve. This is an unusual plant configuration that would require extensive preparations from both physical and system operation standpoints. It would additionally be necessary to analyze the loading on the main steam lines to determine whether temporary supports are necessary for the additional loading of the water.

2. The main steam safety-relief valves are set at pressures ranging from 1064 to 1117 pounds per square inch (psig). For Code Class 2 components with design temperatures greater than 200 degrees Fahrenheit, the code requires a test pressure of 1.25 times the lowest-relief-valve settings, which protects that component. The required test pressure for this repair would therefore be 1330 psig. This test pressure would require the removal or gagging of the main-steam safety valves, and the installation of a temporary relief valve set at the maximum allowed test pressure.

3. The additional unit downtime to perform these hydrostatic tests would present a significant expense to TVA in replacement power for the TVA system. The increase in safety or quality afforded by these tests, above that of the proposed alternative, is not commensurate with this expense.

Proposed Alternative:

In lieu of a hydrostatic pressure test, TVA proposes to perform the following:

1. The new welds will receive a radiographic examination and supplemented ultrasonic examination of the final weld.

   This sequence of nondestructive examination is designed to detect any existing fabrication induced flaws.

2. Pursuant to IWA-5242, a visual examination (VT-2) will be performed in conjunction with a system leakage test per IWA-5211(c).