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J. W. Wilson
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November 17, 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) - UNITS 1 AND 2 - REVISION TO IN-SERVICE PRESSURE TEST (ISPT) PROGRAM IN SUPPORT OF CYCLE 6 REFUELING OUTAGES

References:

1. NRC letter to TVA dated September 21, 1992, "Seven Requests for Relief From the American Society of Mechanical Engineers Section XI Code, Hydrostatic Pressure Test Requirements, Sequoyah Nuclear Plant Units 1 and 2, Request for Additional Information (TAC Nos. M81539 and M81540)"

2. TVA letter to NRC dated August 30, 1991, "Sequoyah Nuclear Plant (SQN) - Request for Relief From the American Society of Mechanical Engineers (ASME) Section XI, Hydrostatic Pressure Test Requirements"

3. NRC letter to TVA dated January 17, 1991, "Inservice Pressure Test Program (TAC Nos. M72017/72018) - Sequoyah Nuclear Plant, Units 1 and 2"

In the Reference 3 letter, the staff issued its evaluation of TVA's ISPT program for SQN Units 1 and 2. Enclosed is a revision to Section 5.0 of SQN's ISPT program that adds three new relief requests entitled ISPT-2, ISPT-3, and ISPT-4. These relief requests are being submitted in accordance with 10 CFR 50.55a(a)(3). ISPT-2 and ISPT-3 are similar to the ASME pressure test relief requests approved by NRC for Diablo Canyon Nuclear Plant on September 21, 1992. Since these new relief requests are associated with pressure test activities in SQN's Unit 1 Cycle 6 refueling outage (scheduled to begin April 2, 1993, and end June 5, 1993), TVA requests that NRC response be provided as soon as possible to support the necessary planning and scheduling for this outage.

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In the Reference 1 letter, NRC requested additional information on seven relief requests associated with hydrostatic pressure tests required by the ASME Section XI code. NRC concluded in Reference 1 that relief could not be granted as a result of insufficient information.

Our initial review of Reference 1 and discussions with your staff were unable to clearly ascertain the scope of the additional or revised information that was needed by the staff and whether that information would result in staff approval of the subject relief requests. We understand that not withstanding ongoing code subcommittee initiatives for utilizing 10 CFR 50, Appendix J, the staff is not amenable at this time to the application of Appendix J testing in lieu of the code-required test. On the basis of this uncertainty and the short remaining duration until our Unit 1 Cycle 6 refueling outage, we have chosen to withdraw the seven relief requests provided by Reference 2 and invoke the recently approved code Case N-498.

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

Sincerely,

J. L. Wilson

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ENCLOSURE

IN-SERVICE PRESSURE TEST PROGRAM (ISPT)

FOR FIRST 10-YEAR INTERVAL

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

REVISION TO SECTION 5.0

TO ADD RELIEF REQUESTS

ISPT-2, ISPT-3, AND ISPT-4

REQUEST FOR RELIEF ISPT-2

System: Safety injection (63)

Drawings: Final Safety Analysis Report (FSAR) Figure 6.3.2-1

Components: Pressure boundary piping between:

(1) Hot-leg injection lines:

Loop 1 - from check valve 63-641 to check valve 63-640 (8 inches), check valve 63-543 (2 inches), and valve FCV-63-163 (3/4 inch)

Loop 2 - from check valve 63-559 to check valve 63-547 (2 inches), and valve FCV-63-165 (3/4 inch)

Loop 3 - from check valve 63-644 to check valve 63-643 (8 inches), check valve 63-545 (2 inches), and valve FCV-63-164 (3/4 inch)

Loop 4 - from check valve 63-558 to check valve 63-549 (2 inches), and valve FCV-63-166 (3/4 inch)

(2) Cold-leg injection lines:

Loop 1 - from check valve 63-560 to check valve 63-622 (10 inches), check valve 63-633 (6 inches), check valve 63-551 (2 inches), and valve FCV-63-117 (3/4 inch)

Loop 2 - from check valve 63-561 to check valve 63-623 (10 inches), check valve 63-632 (6 inches), check valve 63-553 (2 inches), and valve FCV-63-97 (3/4 inch)

Loop 3 - from check valve 63-562 to check valve 63-624 (10 inches), check valve 63-634 (6 inches), check valve 63-555 (2 inches), and valve FCV-63-79 (3/4 inch)

Loop 4 - from check valve 63-563 to check valve 63-625 (10 inches), check valve 63-635 (6 inches), check valve 63-557 (2 inches), and valve FCV-63-69 (3/4 inch)

(3) Cold-leg injection lines (1 1/2 inches) from check valves 63-586 (loop 1), 63-587 (loop 2), 63-588 (loop 3), and 63-589 (loop 4), to check valve 63-581 (3 inches) and isolation valve FCV-63-24 (1 inch)

Class: 1

Function: Reactor coolant system (RCS) pressure boundary

Impractical Requirement: Code Case N-498, "Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems," Section XI, Division 1, Item (a)(2), "The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary."

Basis For Relief: The subject injection line segments are located between the primary and secondary safety-injection check valves. The hot-leg injection line segments are not pressurized during normal operation or during cold shutdown. The cold-leg injection line segments are pressurized to the pressure of the safety-injection accumulators (650 pounds per square inch gauge [psig]) during normal operation.

The pressurization of these line segments to a test pressure equivalent to nominal RCS pressure (2235 psig) during Modes 4, 5, or 6 is not possible because of insufficient RCS pressure to keep the primary check valve closed against test pressure. Pressurization of these line segments to full RCS pressure during Modes 1, 2, or 3 would risk injection of cold water into the RCS.

Full compliance with the code-case alternative would require either removal of the primary check valve disks or installation of temporary piping to provide a flow path around the primary check valve. This option requires a modification to SQN's RCS, which would place an unusual hardship on the plant staff and would require several days of critical path outage time for installation and removal.

TVA has chosen to utilize the alternative to the code-required hydrostatic test provided by code Case N-498 for SQN's ASME Class 1 piping. However, the hardship in testing the subject piping exists for both the code hydrostatic test and the code-case alternative leakage test.

Alternative Testing: The cold-leg injection line segments will be visually examined (VT-2) during the RCS leakage test conducted during start-up following each refueling outage. This leakage test is performed at safety-injection accumulator pressure (nominally 650 psig).

The hot-leg injection line segments will be visually examined (VT-2) once every ten years with the unit in Mode 3. The pressure during this test will be the discharge pressure of the safety-injection pump, which is approximately 1500 psig.

REQUEST FOR RELIEF ISPT-3

System: Reactor coolant (68)
Chemical and volume control (62)

Drawings: FSAR Figures 5.1-1 and 9.3.4-1

Component: Pressure boundary piping between:

(1) Drain lines from:

Loop 1 - valve 68-549 to 68-550 (2 inches) and 68-551 (3/4 inch)

Loop 2 - valve 68-553 to 68-554 (2 inches) and 68-593 to blind flange (3/4 inch)

Loop 3 - valve 68-581 to 68-582 (2 inches)

Loop 4 - valve 68-557 to 558 (2 inches)

(2) Reactor vessel head vent (3/4 inch) from:

Valve 68-597 to flange (3/4 inch), valve 68-602 to flange (3/4 inch), valves FSV-68-394 and FSV-68-395 to valves FSV-68-396 and FSV-68-397

(3) Pressurizer spray vents (3/4 inch) from:

Valve 68-594 to flange, and valve 68-577 to flange

(4) Excess letdown drain (3/4 inch) from valve 62-701 to flange.

(5) Reactor coolant pump seal drain and vent lines (3/4 inch) from:

Loop 1 - valve 62-572 to flange, valve 62-580 to flange

Loop 2 - valve 62-573 to flange, valve 62-581 to flange

Loop 3 - valve 62-575 to flange, valve 62-582 to flange

Loop 4 - valve 62-574 to flange, valve 62-583 to flange

Class: 1

Function: Reactor coolant pressure boundary

Impractical Requirement: Code Case N-498, "Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems," Section XI, Division 1, Item (a)(2), "The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary."

Basis For Relief: Various piping segments are located in open-end tailpipes that serve as vent, drain, test, or fill lines. Manual valves and flanges bound these piping segments to provide the design-required double isolation at the reactor coolant pressure boundary. These piping segments are not normally pressurized.

Pressure testing of these piping segments at nominal operating pressure in Mode 3 would require that the inboard isolation valve be opened when the RCS is at full temperature and pressure (547 degrees Fahrenheit and 2235 psig). This action would violate the design requirement for double isolation valve protection. The potential for spills when opening the system presents a significant risk of personnel contamination. Pressure testing in Mode 6 would require that a hydrostatic pump be connected at each segment location. However, for some segments there is no connection available and would require a modification for installation of a pump connection. These piping segments are located in high-radiation areas, and testing would result in high-personnel radiation exposures. A breakdown of the dose estimates for each radiation area in the plant is provided below:

1.	RCS Loop Drains 6 items at 10 person-hours per item 300 millirem (mrem)/hour	18.000 person-roentgen equivalent man (person-rem)
2.	Reactor Vessel Head Vents 2 items at 10 person-hours per item 150 mrem/hour 2 items at 8 person-hours per item 20 mrem/hour	3.320 person-rem
3.	Pressurizer Spray Vents 2 items at 10 person-hours per item 200 mrem/hour	4.000 person-rem
4.	Excess Letdown Drain 1 item at 8 person-hours per item 50 mrem/hour	0.400 person-rem
5.	RCS Seal Drains and Vents 4 items at 8 person-hours per item 20 mrem/hour 4 items at 8 person-hours per item 50 mrem/hour	2.240 person-rem

Based on estimated durations and actual survey data from SQN's Cycle 5 outages, a total dose estimate of 27.960 person-rem is predicted for the subject pressure test.

These piping segments are visually inspected each refueling outage as the unit returns to operation. These segments are not specifically pressurized past the first isolation valve for this inspection. It is possible that the piping is pressurized because of leakage at the first isolation valve. With these inspections being performed approximately six times in each inspection interval, the increase in safety achieved from the required nominal operating pressure test is not commensurate with the hardship of performing such testing.

Alternative Testing: These piping segments will continue to be visually inspected following each refueling outage for leakage and evidence of past leakage during the RCS leakage test. This test is conducted with the RCS at full operating temperature and pressure.

REQUEST FOR RELIEF ISPT-4

System: Reactor coolant (68)
Chemical and volume control (62)
Safety injection (63)
Containment spray (72)

Drawings: FSAR Figures 5.1-1, 9.3.4-1, 6.3.2-1, and 6.2.2-2

Component: Pressure boundary piping between system relief valves 63-626, 63-627, 63-534, 63-536, 63-535, 63-511, 62-505, 72-512, 72-513 and check valve 68-559

Class: 2

Function: Containment penetration piping from the listed systems for overpressure relief of those systems with the discharge routed to the pressurizer relief tank

Impractical Requirement: ASME Section XI, IWC-2500-1, Category C-H, Item Number C7.21 (IWC-5222), "The system hydrostatic test shall be conducted at or near the end of each inspection interval or during the same period of each inspection interval of Inspection Program B."

Basis For Relief: The relief valves above provide safety relief for their respective systems. These valves are located in the auxiliary building and discharge into one common header that penetrates the containment building where it discharges into the pressurizer relief tank (PRT). The ASME Class 2 boundary extends from the safety-system relief valves in the auxiliary building to the containment inboard check valve 68-559. The piping continues from check valve 68-559 to the PRT with no isolation valves.

During normal plant operation, the ASME Class 2 section of piping is typically empty and is not pressurized. In the event the piping does experience pressurization because of relief valve lift, the relief fluid would be reactor grade water, which is noncorrosive. In addition, the pressure in this section of piping is limited by the PRT rupture disk, which is designed to rupture at 85 psig and relieve to the containment atmosphere. This configuration thereby limits the pressure in the Class 2 section of piping to a maximum of 85 psig, well below its design pressure of 150 psig.

The current system configuration does not provide a way to pressurize this piping for the hydrostatic test. The hardship associated with testing this line was previously recognized by the staff in a January 15, 1988, letter to TVA, "Exemption from 10 CFR 50, Appendix J, Type C Leak Rate Testing." The staff noted that Type C leak rate testing presently cannot be performed because there are no manual or remote-manual block valves in the line that would allow testing of the relief valves. Furthermore, ASME Section III, Class 2 NX-3677.3, states that there shall be no intervening stop valves between pressure relief valves and their relief points to ensure those lines

cannot be inadvertently isolated. An exemption from the Appendix J, Type C, test was granted by the staff on the basis that the pressure relief piping is a closed system outside containment and that modifications to permit testing may adversely affect system reliability.

Alternate Testing: Because of the unusual configuration of the subject piping, no alternate testing is proposed.