Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

October 12, 2000

10 CFR 50.55a(a)(3)(ii)

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-260
Tennessee Valley Authority	)	50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 2 AND 3 - AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI, SYSTEM PRESSURE TEST PROGRAM - REQUESTS FOR RELIEF 2-SPT-14, AND 3-SPT-8 (TAC NOS. MB0146 AND MB0147)

TVA is requesting relief from specified system pressure test requirements in Section XI of the ASME Boiler and Pressure Vessel Code. Enclosure 1 to this letter contains request for relief 2-SPT-14. In addition, Enclosure 2 submits request for relief 3-SPT-8 for NRC review and approval.

Relief requests 2-SPT-14 and 3-SPT-8 address the four hour hold time requirement associated with the ten-year hydrostatic pressure test on a portion of the Class 2 High Pressure Coolant Injection System. These requests for relief are being submitted in accordance with 10 CFR 50.55a(a)(3)(ii) as a hardship or unusual difficulty in complying with the specified requirements without a compensating increase in the level of quality and safety.

Requests for relief 2-SPT-14 and 3-SPT-8 are similar to the alternate examination requirements (request for relief RR-15) accepted for use at Hatch Nuclear Plant by NRC letter to Southern Nuclear Operating Company, Incorporated, dated June 16, 1997.

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TVA requests review of the Unit 2 request for relief (2-SPT-14) by March 1, 2001, to support the Unit 2 Cycle 11 (Spring 2001) refueling outage. TVA also requests review of the Unit 3 request for relief (3-SPT-8) by November 19, 2002, (start of the third period of the second ten-year interval). There are no commitments contained in this letter. If you have any questions, please telephone me at (256) 729-2636.

Sincerely,

T. E. Abney
Manager of Licensing
and Industry Affairs

Enclosures
cc: See Page 3

Enclosures
cc: (Enclosures):
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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
SYSTEM PRESSURE TEST (SPT) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 2-SPT-14

(SEE ATTACHED)

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 2
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
SYSTEM PRESSURE TEST (SPT) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 2-SPT-14

Executive Summary:

In the 1986 Edition of the ASME Section XI Code, Class 2 systems, such as High Pressure Coolant Injection (HPCI), require performance of a functional system pressure test once per inspection period (approximately 3.3 years). At, or near, the end of the ten-year inspection interval a hydrostatic pressure test is substituted for the functional pressure test. Both the ASME Section XI Code and Code Case N-498-1 require a 4-hour hold time prior to the visual (VT-2) examination of insulated components during the hydrostatic pressure test. TVA requests relief from the 4-hour hold time associated with hydrostatic tests for the Class 2 HPCI turbine steam supply/exhaust lines, and associated drains and vent lines extending from that piping. Relief is being requested under 10 CFR 50.55a(a)(3)(ii) as a hardship or unusual difficulty in complying with the specified requirements, without a compensating increase in the level of quality and safety. This request for relief applies to the current (second) ten-year inspection interval for BFN Unit 2.

The Class 2 HPCI steam supply piping from the outboard primary containment isolation valve to the steam admission flow control valve, located near the HPCI turbine, is normally pressurized to reactor pressure and can receive a 4-hour pressurized hold time prior to examination. This normally pressurized steam piping is not included within the boundary addressed in this request. The boundary related to this relief request will extend from the steam admission flow control valve through the HPCI turbine and the turbine exhaust piping to the suppression chamber along with the associated drains and vent lines.

This request for relief is similar to the alternate examination requirements (request for relief RR-15) accepted for use at Hatch Nuclear Plant by NRC letter to Southern Nuclear Operating Company, Incorporated, dated June 16, 1997.

Unit: Two (2)

System: High Pressure Coolant Injection (HPCI). (Note: The boundary of this relief request extends from the steam admission valve (FCV-73-16) through the HPCI turbine and the turbine exhaust piping to the supression chamber and the associated drains and vent lines. See attachment for markup.)

Code Class: ASME Code Class 2 Equivalent

Section XI Edition: 1986 Edition (no addenda)

Code Table: IWC-2500-1

Examination Category: C-H, All Pressure Retaining Components

Examination Item Number: C7.20, C7.40, C7.60, and C7.80

Code Requirement: Subsection IWC-5210 requires a system hydrostatic test in accordance with IWA-5211(d) and Table IWC-2500-1, Examination Category C-H. Table IWC-2500-1, Examination Category C-H requires a visual (VT-2) examination during a system hydrostatic test (in accordance with IWA-5000, IWC-5000, and specifically IWC-5222) of all Class 2 components once per interval. Subsection IWA-5213(d) requires a 4-hour holding time after attaining the test pressure and temperature conditions for insulated systems, and 10 minutes for non-insulated systems and components.

Code Case N-498-1, an alternative to the hydrostatic pressure test requirement of IWC-2500-1, Examination Category C-H, also requires pressurization at nominal operating pressure for 4 hours prior to the visual examination for insulated systems and 10 minutes for non-insulated systems.

Code Requirement From Which Relief is Requested:

The 4-hour holding time listed in IWA-5213(d) and the 4 hours at nominal operating pressure prior to examination required in Code Case N-498-1.

Basis for Relief:

This relief is being requested in accordance with 10 CFR 50.55a (a)(3)(ii) as a hardship or unusual difficulty in complying with the specified requirements, without a compensating increase in the level of quality and safety.

Performance of a 5-hour (4-hour hold time and 1 hour examination) HPCI run while the reactor is at power would reduce the steam condensation capabilities of the suppression pool and seriously challenge the heat limitations imposed on the suppression pool water even with both loops of RHR in suppression pool cooling. It would also challenge the control of suppression pool water level as well as drywell to suppression chamber differential pressure.

Performance of a water solid test for this section of piping is not considered practical or feasible since the HPCI turbine exhaust piping is not designed for the weight of a water solid condition.

Alternate Examination:

As an alternative to the hydrostatic test, TVA is proposing that a system functional pressure test be performed on this section of piping in accordance with subsections IWC-5210(a)(1) and IWA-5211(b). This would provide all the normal pressure test program provisions for this examination; however, instead of the 4-hour hold time, a 10 minute hold time would be required.

Justification for Granting Relief:

Code Case N-498-1 has been approved for use on BFN Unit 2. Code Case N-498-1 allows use of system nominal operating pressure during the 10 year hydrostatic testing.

Performance of a 5-hour (4-hour hold time and 1-hour examination) HPCI run while the reactor is at power

would reduce the steam condensation capabilities of the suppression pool and seriously challenge the heat limitations imposed on the suppression pool water even with both loops of RHR in suppression pool cooling. It would also challenge the control of suppression pool water level as well as drywell to suppression chamber differential pressure.

Performance of a water solid test on this section of piping is not considered practical or feasible because the HPCI turbine exhaust piping is designed to exhaust steam from the HPCI turbine to the suppression pool and is not designed for the weight of a water solid condition.

The Code requires three pressure tests on this system during a 10-year inspection interval. Even with relief, this portion of HPCI will receive three Code visual (VT-2) examinations during the 10-year inspection interval. This would allow sufficient opportunity to identify any potential threats to the pressure boundary; and therefore, provide reasonable assurance of system structural integrity.

In addition to the three Code required pressure tests there are numerous other opportunities in which pressure boundary leakage could be identified. The BFN Technical Specifications require periodic system functional tests and many maintenance activities require pump/turbine operation for post maintenance testing. The additional hold time during this one test would provide further opportunity for the identification of potential leakage. However, in comparison with the numerous other opportunities, this additional benefit is not considered significant when compared to the challenges imposed on the safety-related parameters which would be affected by the extended run of the HPCI turbine.

Conclusion: Extended operation of HPCI reduces the steam condensation capabilities of the suppression pool and challenges safety system controls. A water solid test of this piping is not feasible because the piping is not designed for the weight of the water. Numerous other opportunities are realized in which the HPCI turbine and steam piping may be observed. This will allow sufficient opportunity to

identify any potential threats to the pressure boundary and provide reasonable assurance of system structural integrity. Compliance with the required 4-hour hold time would impose a hardship and unusual difficulty without a compensating increase in the level of quality and safety.

Implementation Schedule: This relief is requested for the current (second) Ten-Year inspection interval for BFN Unit 2. Specifically, an ASME Section XI system functional pressure test (Surveillence Instruction 2-SI-3.3.9) was performed in accordance with subsection IWA-5000 and IWC-5210(a)(1) on the portion of the Unit 2 HPCI system addressed in this request on January 20, 2000. This test was performed during the third inspection period near the end of the current inspection interval. BFN intends to take credit for that system functional pressure test to satisfy the requirements of the ten-year hydrostatic pressure test under this request for relief for this portion of the Unit 2 HPCI System.

Attachment: BFN HPCI System flow diagram, 2-47E812-1, showing the major junctions of the boundary addressed in this request for relief.

Note: The system flow diagram (2-47E812-1) is color coded. The ASME Class 2 equivalent piping and components are shown in yellow/orange. The portion of the class 2 components that are not part of this relief request have been marked through.

2-SPT-14

Attachment

Note For Request for Relief 2-SPT-14,

This system flow diagram is color coded. The ASME Class 2 equivalent piping and components are shown in yellow/orange. The portion of the Class 2 components that are not part of this relief request have been marked through.

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
SYSTEM PRESSURE TEST (SPT) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 3-SPT-8

(SEE ATTACHED)

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNIT 3
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
SYSTEM PRESSURE TEST (SPT) PROGRAM
(SECOND TEN-YEAR INSPECTION INTERVAL)

REQUEST FOR RELIEF 3-SPT-8

Executive Summary:

In the 1989 Edition of the ASME Section XI Code, Class 2 systems, such as High Pressure Coolant Injection (HPCI), require performance of a functional system pressure test once per inspection period (approximately 3.3 years). At, or near, the end of the ten-year inspection interval a hydrostatic pressure test is substituted for the functional pressure test. Both the ASME Section XI Code and Code Case N-498-1 require a 4-hour hold time prior to the visual (VT-2) examination of insulated components during the hydrostatic pressure test. TVA requests relief from the 4-hour hold time associated with hydrostatic tests for the Class 2 HPCI turbine steam supply/exhaust lines, and associated drains and vent lines extending from that piping. Relief is being requested under 10 CFR 50.55a(a)(3)(ii) as a hardship or unusual difficulty in complying with the specified requirements, without a compensating increase in the level of quality and safety. This request for relief applies to the current (second) ten-year inspection interval for BFN Unit 3.

The Class 2 HPCI steam supply piping from the outboard primary containment isolation valve to the steam admission flow control valve, located near the HPCI turbine, is normally pressurized to reactor pressure and can receive a 4-hour pressurized hold time prior to examination. This normally pressurized steam piping is not included within the boundary addressed in this request. The boundary related to this relief request will extend from the steam admission flow control valve through the HPCI turbine and the turbine exhaust piping to the suppression chamber along with the associated drains and vent lines.

This request for relief is similar to the alternate examination requirements (request for relief RR-15) accepted for use at Hatch Nuclear Plant by NRC letter to Southern Nuclear Operating Company, Incorporated, dated June 16, 1997.

Unit: Three (3)

System: High Pressure Coolant Injection (HPCI). (Note: The boundary of this relief request extends from the steam admission valve (FCV-73-16) through the HPCI turbine and the turbine exhaust piping to the supression chamber and the associated drains and vent lines. See attachment for markup.)

Code Class: ASME Code Class 2 Equivalent

Section XI Edition: 1989 Edition (no addenda)

Code Table: IWC-2500-1

Examination Category: C-H, All Pressure Retaining Components

Examination Item Number: C7.20, C7.40, C7.60, and C7.80

Code Requirement: Subsection IWC-5210 requires a system hydrostatic test in accordance with IWA-5211(d) and Table IWC-2500-1, Examination Category C-H. Table IWC-2500-1, Examination Category C-H requires a visual (VT-2) examination during a system hydrostatic test (in accordance with IWA-5000, IWC-5000, and specifically IWC-5222) of all Class 2 components once per interval. Subsection IWA-5213(d) requires a 4-hour holding time after attaining the test pressure and temperature conditions for insulated systems, and 10 minutes for non-insulated systems and components.

Code Case N-498-1, an alternative to the hydrostatic pressure test requirement of IWC-2500-1, Examination Category C-H, also requires pressurization at nominal operating pressure for 4 hours prior to the visual examination for insulated systems and 10 minutes for non-insulated systems.

Code Requirement From Which Relief is Requested:

The 4-hour holding time listed in IWA-5213(d) and the 4 hours at nominal operating pressure prior to examination required in Code Case N-498-1.

Basis for Relief:

This relief is being requested in accordance with 10 CFR 50.55a (a)(3)(ii) as a hardship or unusual difficulty in complying with the specified requirements, without a compensating increase in the level of quality and safety.

Performance of a 5-hour (4-hour hold time and 1 hour examination) HPCI run while the reactor is at power would reduce the steam condensation capabilities of the suppression pool and seriously challenge the heat limitations imposed on the suppression pool water even with both loops of RHR in suppression pool cooling. It would also challenge the control of suppression pool water level as well as drywell to suppression chamber differential pressure.

Performance of a water solid test for this section of piping is not considered practical or feasible since the HPCI turbine exhaust piping is not designed for the weight of a water solid condition.

Alternate Examination:

As an alternative to the hydrostatic test, TVA is proposing that a system functional pressure test be performed on this section of piping in accordance with subsections IWC-5210(a)(1) and IWA-5211(b). This would provide all the normal pressure test program provisions for this examination; however, instead of the 4-hour hold time, a 10 minute hold time would be required.

Justification for Granting Relief:

Code Case N-498-1 has been approved for use on BFN Unit 3. Code Case N-498-1 allows use of system nominal operating pressure during the 10 year hydrostatic testing.

Performance of a 5-hour (4-hour hold time and 1-hour examination) HPCI run while the reactor is at power would reduce the steam condensation capabilities of

the suppression pool and seriously challenge the heat limitations imposed on the suppression pool water even with both loops of RHR in suppression pool cooling. It would also challenge the control of suppression pool water level as well as drywell to suppression chamber differential pressure.

Performance of a water solid test on this section of piping is not considered practical or feasible because the HPCI turbine exhaust piping is designed to exhaust steam from the HPCI turbine to the suppression pool and is not designed for the weight of a water solid condition.

The Code requires three pressure tests on this system during a 10-year inspection interval. Even with this relief, this portion of HPCI will receive three Code visual (VT-2) examinations during the 10-year inspection interval. This will allow sufficient opportunity to identify any potential threats to the pressure boundary; and therefore, provide reasonable assurance of system structural integrity.

In addition to the three Code required pressure tests there are numerous other opportunities in which pressure boundary leakage could be identified. The BFN Technical Specifications require periodic system functional tests and many maintenance activities require pump/turbine operation for post maintenance testing. The additional hold time during this one test would provide further opportunity for the identification of potential leakage. However, in comparison with the numerous other opportunities, this additional benefit is not considered significant when compared to the challenges imposed on the safety-related parameters which would be affected by the extended run of the HPCI turbine.

Conclusion: Extended operation of HPCI reduces the steam condensation capabilities of the suppression pool and challenges safety system controls. A water solid test of this piping is not feasible because the piping is not designed for the weight of the water. Numerous other opportunities are realized in which the HPCI turbine and steam piping may be observed. This will allow sufficient opportunity to identify any potential threats to the pressure boundary and provide reasonable assurance of system structural integrity. Compliance with the required

4-hour hold time would impose a hardship and unusual difficulty without a compensating increase in the level of quality and safety.

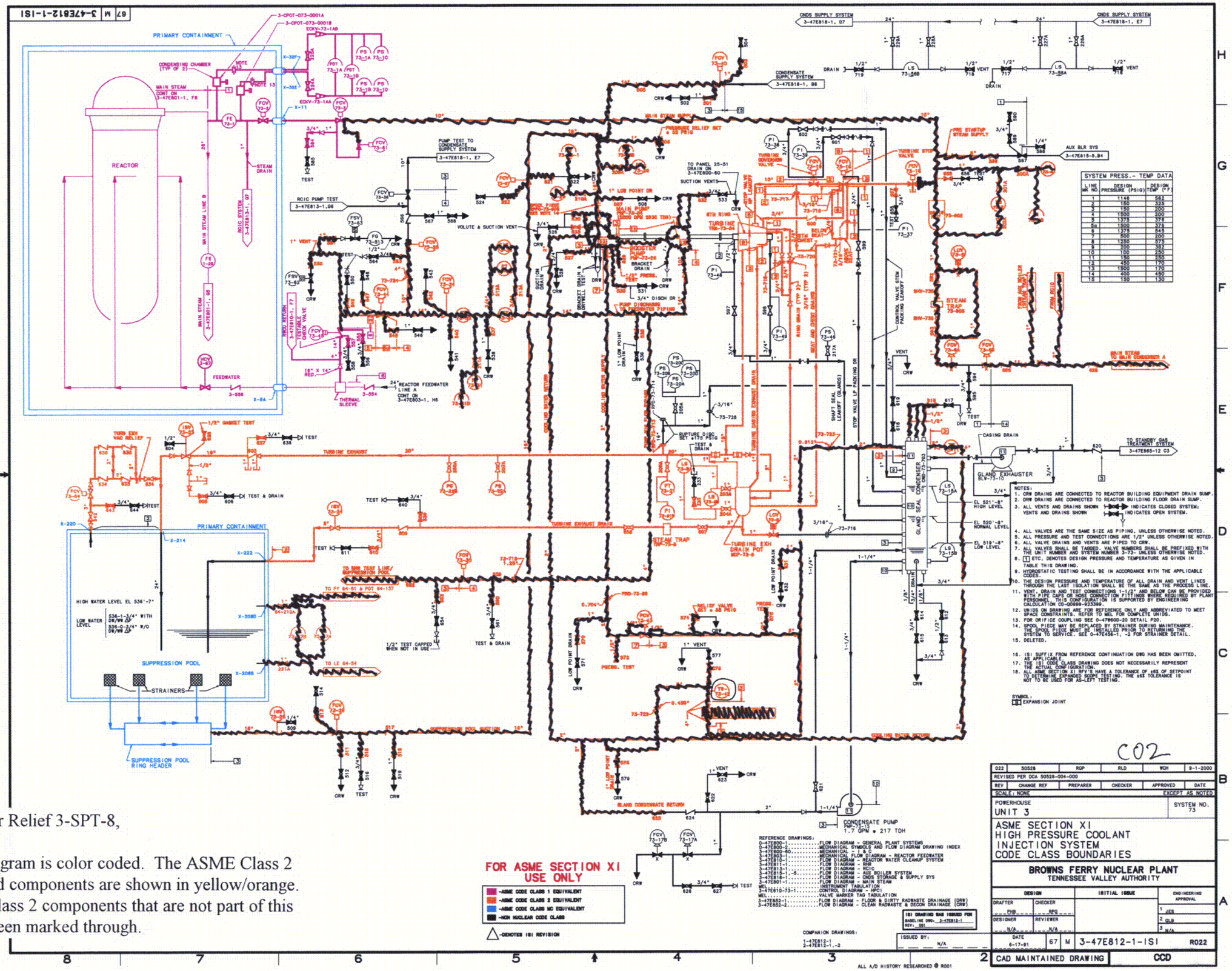
Implementation Schedule: This relief is requested for the current (second) Ten-Year inspection interval for BFN Unit 3.

Attachment: BFN HPCI System flow diagram, 3-47E812-1, showing the major junctions of the boundary addressed in this request for relief.

Note: The system flow diagram (3-47E812-1) is color coded. The ASME Class 2 equivalent piping and components are shown in yellow/orange. The portion of the class 2 components that are not part of this relief request have been marked through.

3-SPT-8

Attachment



Note For Request for Relief 3-SPT-8,

This system flow diagram is color coded. The ASME Class 2 equivalent piping and components are shown in yellow/orange. The portion of the Class 2 components that are not part of this relief request have been marked through.