ATTACHMENT 3

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TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT

ASME SYSTEM PRESSURE TESTING

PROGRAM BASIS DOCUMENT

This document is to be used only for the second ten year inspection interval for ASME Section XI

REVISION NO. 1

SUBMITTED BY K R Wilson DATE 10-23-95
PROGRAM ENGINEER

APPROVED BY Wm Jones DATE 10-24-95
ASME SECTION XI & SPECIAL PROGRAMS SUPV.

APPROVED BY [signature] DATE 10/30/95
MECHANICAL/NUCLEAR LEAD ENGINEER

REVISION LOG

REVISION	DESCRIPTION OF REVISION	DATE
0	Initial Issue RIMS # B38951024801	March 28, 1994
1	Minor editorial revisions.	

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I. CHARTER

Note: This document has been prepared for the Second Ten Year ASME Section XI Inspection Interval. Positions or commitments regarding the first ten year inspection interval should be based on existing FSAR, SER, and other system documents.

A. MISSION STATEMENT

The ASME Section XI Section shall incorporate TVA policies and standards to support safe and reliable operation of Sequoyah Nuclear Plant through the following:

1. Establishing and maintaining the ASME Section XI Pressure Test Program to ensure the requirements of 10CFR50.55a and Technical Specifications are met.

2. For all cases where ASME pressure test requirements are not met, or alternatives to Code requirements are proposed, provide a documented relief request with subsequent NRC approval.

3. Development of implementing procedures to satisfy programatic requirements by the Program Test Engineer.

The Program Engineer & the Program Test Engineer shall hold responsibility, accountability, and authority for accomplishing this mission and maintaining the program.

The Supervisor, ASME XI and Special Programs shall assign the Program Engineer and provide the resources necessary to accomplish this mission.

B. OBJECTIVES

The Objectives of the ASME Section XI Pressure Test Program areas follows:

1. Perform system pressure testing in accordance with ASME Section XI, 1989 Edition unless relief is requested for alternative testing.

2. Perform system pressure tests taking into consideration the requirements of Code Case N-498.

3. Maintain system pressure boundary integrity by satisfing Tech Spec Surveillance Requirements 4.4.10.

4. Maintain clearly defined responsibilities of organizations involved with pressure testing.

5. Maintain applicable procedures, test equipment, and methods to current industry standards or better.

6. No NRC violations due to the ASME Pressure Testing Program

II. PURPOSE - BASES

The rules for the inservice pressure testing for Nuclear Power Plant Components are contained in the ASME Boiler and Pressure Vessel Code, Section XI, Division 1. 10CFR50.55a of the federal law and Sequoyah's technical specifications require that ASME Section XI be met throughout the service life of the nuclear power plant and updated at each 10 year interval.

Under the provisions of 10 CFR 50.55a, inservice pressure testing of safety related piping systems will be performed in accordance with a specific edition of Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. The interval dates,applicable editions and addenda for the first 10 year interval were as follows:

First Interval Start Unit 1: 7/1981
First Interval Start Unit 2: 6/1982

The present Code of Record is ASME Section XI, 1977 Edition with Addenda through Summer 1978.
The following are in accordance with ASME Section SI, 1980 Edition with Addenda through Winter 1981 in lieu of the Code of Record:
1) Test Pressurization Boundaries [IWA-5211(d), IWA-5224, IWA5221 and Footnote 1 for Examination Category B-P of Table IWB-2500-1]
2) Definition of "Normal Reactor Operations" (Footnote 4 of IWB-1000)
3) Hydrostatic Pressure Including Static Head [IWA-5265(b)]
4) Code Class 1 or Equivalent Specified Test Pressure [IWB-5222(a) & (b)]
5) Code Class 2 and 3 or Equivalent - Use of Design Pressure [IWC-5222(a)]
6) Definition of "Opened-Ended" Systems and Components (Footnote 1 of IWC-5222(d)

As required by 10 CFR 50.55a (b), the effective edition of Section XI with regard to the second ten year interval is as follows:

Second Interval Start Units 1 & 2: Estimated 12/15/95
Unit 1 & 2: 1989 Edition

Additionally, IWA-5214(a) from the 1990 Addenda will be used. This addenda resolves the conflicts between the references given in IWA-5214(a) in the 1989 Edition.

III. REFERENCES

1. 10CFR50.55a

2. Code Case N-498, Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems.

3. ASME Boiler and Pressure Vessel Code, Section XI, Division 1, 1989 Edition.

4. ASME Boiler and Pressure Vessel Code, Section III, 1989 Edition.

5. ANSI/ASME N45.2.6-1978, Qualification of Inspection Examination and Testing Personnel for Nuclear Power Plants.

6. TVA Calculation SQN-SQTP-001, ASME Section XI Inservice Code Class Boundaries for the Second 10 Year Interval.

7. Reserved

8. Reserved

9. Sequoyah Nuclear Plant Technical Specifications

10. Sequoyah Nuclear Plant Design Criteria and Design Guides:
   a. SQ-DC-V-3.0 Classification of Piping, Pumps, Valves and Vessels
   b. SQ-DC-V-2.16 Single Failure Criteria
   c. SQ-DC-V-3.2 Classification of HVAC Systems

11. TVA submittals to the NRC (later)

12. STD - 6.9, Repair/Replacement of ASME Section XI Components

13. STD - 8.5, ASME Section XI System Pressure Test Program

14. SSP - 9.56, Raw Water Fouling and Corrosion Control Program

15. SQN UFSAR

16. Regulatory Guide 1.147

17. ASME Code Case N-522, Pressure Testing of Containment Penetration Piping

18. Memo from NRC to O.D. Kingsley, Jr., Authorizing Use of ASME Code Case N-416-1, TAC No.'s M90602 and M90603.

19. Memo from NRC to O.D. Kingsley, Jr., Request to Use ASME Code Case N-498-1 as an Alternative to the Required Hydrostatic Pressure Test, TAC No.'s M91827 and M91828.

20. Memo from NRC to O.D. Kingsley, Jr., Authorization to Use ASME Code Case N-522, TAC No.'s M90930 and M90931.

IV. DEFINITIONS

1. Interval - That amount of time approximately equal to 1/4 of expected plant life (10 years). See IWA-2432, 2430(d), 2430(e), and IWB-2412.

2. Period - That amount of time in calendar years and/or months approximately equal to 1/3 of an interval.

3. Design Temperature and Pressure - The design temperature and pressure of a specified system or portion of piping shall be determined by the corresponding system flow diagram.

4. Nominal Temperature and Pressure - The system or component is lined up and exposed to pressure and temperature conditions associated with normal plant operation, or for standby systems those conditions required for the associated system to perform its design safety function.

5. Buried Component - A component that is buried or encased in concrete. This does not include piping which penetrates a concrete wall. This piping is considered inaccessable per IWA-5240.

6. Open Ended - A condition of piping or lines that permits free discharge to open atmosphere or containment atmosphere.

V. PROGRAM SCOPE & PLAN

SCOPE

ASME Section XI, Table IWX-2500-1 identifies those components and test frequency applicable to the pressure test requirements of IWA-5000 for periodic and interval testing. The applicable tables and examination categories in relation to code class are as follows:

Class 1.....Table IWB-2500-1.....Category B-P, B-E
Class 2.....Table IWC-2500-1.....Category C-H, C-B
Class 3.....Table IWD-2500-1.....Category D-A, D-B, and D-C
Class MC.....Table IWE-2500-1..... Category E-P (for Metal Containments penetrations; note that this will be performed under the Appendix J program)

Additionally, repair/replacement activities performed in accordance with the requirements of ASME XI shall be pressure tested prior to resumption of service if required by IWA-4000 or IWA-7000. Alternatively, the requirements of Relief Request ISPT-2 may be used to satisfy the pressure test requirement in lieu of Code required hydrostatic testing.

Attachment 2 provides a pressure test schedule for the systems included within the ASME Section XI boundaries. This schedule gives general information of the systems, boundaries, and the tests required by periods for the second interval. This schedule may be amended as needed as long as compliance with all the Code requirements for system pressure testing is obtained.

PLAN

A. The ASME pressure tests shall be reviewed and approved by the Program Test Engineer.

B. The ASME pressure test records shall be maintained in accordance with Subsections IWA-2400, IWA-5300 and IWA-6000 of the 1989 Edition of ASME Section XI.

VI. REGULATORY REQUIREMENTS

10CFR50.55a (g) requires the inservice inspection and pressure testing of ASME Code Class 1, 2, and 3 components per the 1989 Edition of ASME Section XI. ASME Section XI Subsections IWA, IWB, IWC, IWD and IWE identifies those components and/or systems which shall be tested pursuant to IWA-5000 or 10CFR50 Appendix J for IWE. Later editions and addenda pursuant to paragraph 50.55a(g)(4)(iv) and the use of ASME Code Cases pursuant to footnote 6 to 50.55a of 10CFR50 also apply.

VII. DESCRIPTION

Under the provisions of 10 CFR 50.55a, pressure testing will be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. As required by 10 CFR 50.55a (b), the effective edition of Section XI with regard to the second ten year interval is the 1989 Edition, Division 1.

The pressure test program shall be conducted in accordance with Article IWX-5000 (where IWX refers to IWB, IWC, etc.) of Section XI of the ASME Boiler and Pressure Vessel Code (applicable Edition and Addenda) except for relief requested under the provisions of 10 CFR 50.55a and approved test alternatives contained in code cases listed in the test program.

VIII. PRESSURE TEST REQUIREMENTS

A. Test Description

The pressure retaining components within each system boundary shall be subject to system pressure tests. When test conditions are stable and any required hold times are satisfied a visual examination VT-2 shall be performed to detect any leakage. The required system pressure tests may be conducted in conjunction with one or more of the following system tests:

1. A System Leakage Test conducted following opening and reclosing of a Class 1 system at nominal operating pressure, and prior to plant startup following each reactor refueling outage. When a system leakage test is performed to satisfy the periodic test requirements identified in Table IWB-2500-1, or after reassembly of mechanical joints, no holding time is required after attaining test pressure and temperature conditions.

When a system leakage test is performed in lieu of a 10-year hydrostatic test the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems as per Code Case N-498. When testing to satisfy N-498 the boundary subject to test pressurization and VT-2 examination shall extend to all Class 1 pressure retaining components within the system boundary.

2. A System Functional Test conducted to verify operability in systems or components not required to operate during normal plant operation while under system operating pressure. When a system functional test is performed to satisfy the periodic test requirements identified in Table IWC-2500-1 or IWD-2500-1 a 10 minute holding time is required after attaining system operating pressure.

When a system functional test is performed to satisfy N-498 requirements in lieu of a 10-year hydrostatic test the system shall be pressurized to nominal operating pressure for a minimum of 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination. The boundary subject to test pressurization and examination shall extend to all Class 2 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required. Componerts outside the boundary pressurized under a periodic system/component functional test may be tested separately in a system inservice pressure test.

3. A System Inservice Test conducted to perform a VT-2 visual examination while the system is in service under operating pressure. The system inservice test is normally applied to those safety systems which may be required to operate during the course of normal plant operation. When an inservice test is performed to satisfy the periodic test requirements identified in Table IWC-2500-1 or IWD-2500-1, no holding time is required provided the system has been in operation for at least 4 hours.

When a system inservice test is performed to satisfy N-498 requirements in lieu of a 10-year hydrostatic test the system shall be pressurized to nominal operating pressure for a minimum of 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination. The boundary subject to test pressurization and examination shall extend to all components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatic closure when the safety function is required.

NOTE: The preceding system pressure tests may be used in lieu of a 10-year hydrostatic test for Class 1 and 2 safety systems providing the criteria specified in Code Case N-498 is satisfied during test performance.

Additionally, these same system pressure tests may be used in lieu of a 10-year hydrostatic test for Class 3 safety systems providing the criteria specified in Relief Request ISPT-1 is satisfied.

4. A System Hydrostatic Test conducted during plant shutdown at a pressure above nominal operating pressure or system pressure for which overpressure protection is provided. When performing a system hydrostatic test a 4 hour holding time is required after attaining the test pressure and temperature conditions for insulated systems and 10 minutes for noninsulated systems or components. A hydrostatic test shall be required for those portions of safety systems which are not exposed to nominal operating pressure when testing pursuant to Code Case N-498 or Relief Request ISPT-1. System hydrostatic tests shall be conducted at the test conditions of pressure and temperature specified in IWB-5000, IWC-5000, and IWD-5000.

5. A System Pneumatic Test conducted in lieu of a hydrostatic pressure test for components within the scope of IWC and IWD. When performing a system pneumatic test a 10 minute holding time is required after attaining test pressure.

B. Test Pressurization Boundaries

The following test pressurization and examination boundaries are applicable when performing those periodic tests identified in Table IWX-2500-1. The boundary limits, as discussed in the following, are generally defined by the location of the safety class interface valves within the system.

1. System Leakage Test Boundary - The boundary subject to test pressurization and VT-2 visual examination shall extend to the pressure retaining components within the system boundary containing pressurized reactor coolant under the plant mode of normal reactor startup (Mode 2).

2. System Functional Test Boundary - The boundary subject to test pressurization and VT-2 visual examination shall include only those pressure retaining components within the system boundary pressurized under the test mode required during the performance of a periodic system/component functional test. Quarterly pump testing performed on a minimum flow test circuit does not satisfy the required test boundary if a test circuit is utilized during refueling outages which encompasses an injection flow path.

3. System Inservice Test Boundary - The boundary subject to test pressurization and VT-2 visual examination shall extend to those pressure retaining components under operating pressures during normal system service.

4. System Hydrostatic Test Boundary - The boundary subject to test pressurization and VT-2 visual examination shall include only those portions of systems that were not exposed to nominal operating pressure when tested pursuant to Code Case N-498 or Relief Request ISPT-1.

The ASME Section XI Class 1, 2, & 3 boundaries are defined by the Color Coded ISI drawings and calculation SQN-SQTP-001. Control of these drawings and this calculation is the responisbility of the Nuclear Engineering Department at SQN.

C. Corrective Action

The source of leakages detected during the performance of system pressure tests shall be evaluated by the Program Engineer for corrective measures as follows:

1. Buried components with leakage losses in excess of limits acceptable for continued service shall be repaired or replaced.

2. If leakage occurs at a bolted connection, corrective action shall be initiated in accordance with the requirements of Relief Request ISPT-03.

3. Repairs or replacement of components shall be performed in accordance with IWA-4000 or IWA-7000, respectively.

4. When boric acid residue is detected on components, the leakage source and the areas of general corrosion shall be located. Components with local areas of general corrosion which reduce the wall thickness by more than 10% shall be evaluated to determine whether the component may be acceptable for continued service, or whether repair or replacement is required.

D. Instrument Requirements

NOTE: The following instrument requirements are applicable ONLY when performing system hydrostatic tests.

Any pressure measuring instrument or sensor, analog or ditigal, including the pressure measuring instrument of the normal operating system instrumentation may be used provided the following requirements are met.

1. Accuracy

   The pressure measuring instrument or sensor used shall provide results accurate to within 0.5% of full scale for analog gages and 0.5% over the calibrated range for digital instruments.

2. Calibration

   All pressure measuring instruments shall be calibrated against a standard deadweight tester or calibrated master gage. The gages shall be calibrated before each test or series of tests. A series of tests is a group of tests that use the same pressure measuring instruments and that are conducted within a period not exceeding 2 weeks.

3. Ranges

   Analog gages shall have a graduated range of at least 1.5 times, but not more than 4 times the intended maximum test pressures. Digital pressure instruments shall be selected such that the intended maximum test pressure shall not exceed 70% of the calibrated range of the instrument.

4. Location

   The pressure measuring instrument shall be connected close to the component when testing an isolated component. When testing a group of components or system the instrument shall be connected to any point in the boundary such that the imposed pressure on any component, including static head, will not exceed 106% of the specified test pressure for the system.

IX. RESPONSIBILITIES

1. Program Engineer (Nuclear Engineering)
   - Overall Program Ownership
   - Ensure compliance with existing regulations and standards and update as required
   - Maintain Design Basis Calculations, Program Basis Documents, and IST Drawings

2. Program Test Engineer (Technical Support)
   - Ownership of Site Standard Practice 8.5 "Pressure Test Program"
   - Site Contact for all system pressure testing
   - Procure services and equipment necessary to perform the pressure tests
   - Coordinate test schedules with Operating and Outage schedules
   - Coordinate pressure tests
   - Prepare appropriate Reports (PERs, Periodic Test Reports)
   - Review and approve test results
   - Maintain pressure test procedures
   - Ensure periodic tests are performed on schedule
   - Ensure instrumentation and test equipment necessary to perform system pressure tests is maintained and available for testing
   - Maintain a tracking system to ensure periodic system pressure tests are scheduled and performed to meet periodic and interval system pressure tesing requirements

3. Corporate

   - Preparation and Maintenance of corporate standards.
   - Interperation and coordination of ASME Code interperations and application of generic programs.
   - Coordinate, review and assist in preparation of requests for relief and submittals.
   - Periodic assessments of site code programs

4. Others
   - Operations shall support the pressure tests with valve lineups and equipment operation as required
   - Operations shall perform their portion of the pressure test procedure
   - Instrument Maintenance shall provide for calibration of necessary instrumentation
   - The Mechanical Maintenance organizations shall provide corrective maintenance and test support as necessary

X. TRAINING

1. Program Engineer & Program Test Engineer
   Understanding of 10CFR50.55a
   Knowledge of test instrumentation used to perform pressure tests
   Knowledge of industry standards and ASME Section XI

2. Test Performers
   Understanding of 10CFR50.55a
   Knowledge of test instrumentation used to perform pressure tests
   Knowledge of industry standards and ASME Section XI (as it applies to the performance of testing)

APPENDIX A

REQUEST FOR RELIEF

In the event specific test requirements of 10CFR50.55a and ASME XI are impractical and cannot be met, specific relief may be granted by the NRC. Additionally, requests for relief are included whereas TVA's opinion is such that the proposed alternative testing provides adequate assurance of pressure boundary integrity.

REQUEST FOR RELIEF ISPT-01

Subject:	10-Year hydrostatic pressure test requiremnts for Class 3 systems.
Components:	All Class 3 piping systems which are applicalbe to the hydrostatic pressure test requirements of ASME Section XI.
Code Requirement:	A system hydrostatic pressure test (IWD-5223) and accompanying VT-2 examination is required at least once each inspection interval (Table IWD-2500-1, Categories D-A, D-B, and D-C).
Basis for Relief:	Since the acceptance of Code Case N-498 it has been common recognition that 10-year hydrostatic pressure testing can be somewhat burden some, and in some instances, may expose components to unnecessary stress levels without significant enhancement to quality or safety. TVA SQN employs a very comprehensive corrosion monitoring and control program which periodically performs visual examinations and wall thickness examination by volumetrics on selected Class 3 piping and components as a very accurate means of monitoring for pressure boundary degredation. It is SQN's position that performing system pressure tests on Class 3 systems consistant with the requirements of N-498-1 in conjunction with the Corrosion Monitoring Program provides equivalent or superior assurance of system integrity as that provided by the Code.
Alternate Testing:	The requirements of ASME Code Case N-498-1 will be used for the requirements of system pressure testing for Class 3 systems.

REQUEST FOR RELIEF ISPT - 02

Subject:	Pressure test requirements for welded repairs or installation of replacement items by welding.
Components:	All Class 1, 2, and 3 components which receive welded repairs or are installed by welding as replacements.
Code Requirements:	After repairs by welding on the pressure retaining boundary, a system hydrostatic test shall be performed in accordance with IWA-5000.
Basis for Relief:	Class 1, 2, and 3 pressure boundary replacements requiring installation by welding are normally constructed and supplied in accordance with the requirements of ASME Section III which provides for hydrostatic testing at the manufacturers. Subsequent to installation hydrostatic pressure testing is a means of proving weld integrity. Performing NDE and invoking acceptance criteria in accordance with current ASME III requirements in addition to a system leakage test provides reasonable assurance that weld integrity is maintained at an acceptable level of quality. Its is TVA SQN's position that the performance of hydrostatic testing subsequent to weld repairs and the installation of welded replacements is an impractical requirement which could not only expose components to unnecessary stress levels, but provides little or no enhancement to the level of quality or safety.
Alternative Testing:	The requirements of ASME Code Case N-416-1 shall be used.

REQUEST FOR RELIEF ISPT - 03

Subject:	Bolting examination (VT-3) subsequent to flange leakage occuring during a system pressure test.
Components:	All bolting associated with Class 1, 2, and 3 flange connections which receive a visual examination (VT-2) during the performance of system pressure testing.
Code Requirements:	If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100. (IWA-5250 (a) (2) Corrective Measures)
Basis for Relief:	Current Code requirements specify that all bolting must be removed in the event of a bolted connection leak for the purpose of VT-3 examination and evaluation. This would require placing the associated component or portion of piping out of service possibly resulting in plant shutdown, delaying plant startup, or placing the plant in an unsafe condition for continued operation. Additionally, removal of all bolting is impractical if there is reasonable assurance that bolting material is of a specification which is not susceptible to corrosion when in contact with leaking fluid. It is TVA SQN's position that proposed alternative testing provides an acceptable level of quality and safety as that provided by the Code.
Alternative Testing:	The requirements of IWA-5250(a)(2) of the 1990 Addenda to the 1989 Edition will be used.

REQUEST FOR RELIEF ISPT - 04

Subject: Pressure testing of non-safety system process piping in a containment penetration.

Components: All Class 2 penetration piping whereas the inboard and outboard piping outside the containment isolation valves is classified as non-safety related.

Code Requirements:

1) Piping, pumps, and valves that are part of the containment system, or which penetrate or are attached to the containment vessel. These components shall be examined in accordance with IWB or IWC, as appropriate to the classification defined by the design specification. (IWE-1220(d)).

2) Pressure retaining components, piping and valves require a system pressure test, inservice or functional (IWC-5221) and/or a system hydrostatic test (IWC-5222) in conjunction with a VT-2 visual examination (Table IWC-2500-1, Category C-H).

Basis for Relief:

The portion of piping that penetrates containment and the associated inboard and outboard containment isolation valves are required to be constructed in accordance with Class 1 or 2 design requirements. In the instance where the penetration is associated with a non-safety system, the sole function of the penetration and the associated valves are to provide containment isolation capability for the protection of containment integrity during the unlikely event of a loss of the attached non-safety piping. In all cases the isolation valves associated with these penetrations are maintained, during normal operation, in the locked closed position or close upon receipt of a containment isolation signal. The safety function of these penetrations is verified by 10CFR50 Appendix J leakage testing. The performance of additional pressure testing, as required by Table IWC 2500-1, Category C-H, is considered impractical in the sense that there is minimal enhancement to quality or safety resulting from the additional testing. It is TVA SQN's position that testing pursuant to 10CFR50 Appendix J requirements provides an acceptable level of quality and safety as the additional pressure testing requirements of the Code.

Alternative Testing: The requirements of ASME Code Case N-522 shall be used.

REQUEST FOR RELIEF ISPT - 05

Subject: Pressure testing of Class 1 components.

Components: ASME Code Class 1 vents, drains, test and fill piping which range in diameter from 3/4 inch to 2 inches.

Code Requirement: ASME Section XI, Subsection IWB-2500, Table IWB-2500-1, Category B-P, Footnote 1 states that "The entire pressure retaining boundary of the reactor coolant system is subject to system pressure test conducted in accordance with IWA-5000 with the exceptions specified in IWA-5214 when system pressure tests are conducted for repaired, replaced, or altered components."

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 reactor coolant system (RCS) is at full temperature and pressure (547 F and 2245 psig). The 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 location in high-radiation areas and testing would result in high personnel radiation exposure. 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 at 300 mR/hour

2. Reactor Vessel Head Vents
   2 items at 10 person-hours per item at 150 mR/hour and
   2 items at 8 person-hours per item at 20 mR/hour.

3. Pressurizer Spray Vents
   2 items at 10 person-hours per item at 200 mR/hour.

4. Excess Letdown Drain
   1 item at 8 person-hour per item at 50 mR/hour.

5. RCS Seal Drains and Vents
   4 items at 8 person-hours per item at 20 mR/hour and
   4 items at 8 person-hour per item at 50 mR/hour

where mR stands for millirem. This results in a total of 27.960 Rem of dose accumulated for performing these tests. This data is based on estimated durations and actual survey data from SQN's cycle 5 outages. These radiation exposure

estimates are based on a pressure test in Mode 6 when each of the blind flanges would have to be removed, a test flange installed, and a hydrostatic pump connected. Personnel would remain in the area to perform the test, disconnect the test equipment, and reinstall the blind flange.

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 inspection 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.

Alternate 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-06
VT-2 EXAMINATION

Subject: Alternative requirements for Qualification of VT-2 Examination Personnel

Components: All ASME Class 1, 2, and 3 pressure retaining components subject to the requirements of pressure testing.

Code Requirements: ASME Section XI, Subsection IWA-2300 requires that personnel performing examinations be qualified and certified using a written practice prepared in accordance with SNT-TC-1A and the additional requirements of Division 1 of ASME Section XI.

Basis for Relief: ASME Section XI Code Case N-546 has been approved by ASME but has not been published nor has it been accepted for use by the NRC through Regulatory Guide 1.147. This Case provides alternative requirements for the qualification of personnel to perform VT-2 examinations. The opinion of the Committee is that VT-2 visual examination personnel need not be qualified nor certified to comparable levels of competence in accordance with the referenced standard (i.e., ANSI N45.2.6, ASNT SNT-TC-1A, or ASNT CP-199) provided the examination personnel are qualified in accordance with the following requirements.

1. At least 40 hours plant walkdown experience, such as that gained by licensed and nonlicensed operators, local leak rate personnel, system engineers. and inspection and nondestructive examination personnel.

2. At least four hours of training on Section XI requirements and plant specific procedures for VT-2 visual examination.

3. Vision test requirements of IWA-2321, 1995 Edition.

The use of this Case will allow SQN to use experienced plant personnel to perform the VT-2 examination during the performance of system pressure tests. These personnel are knowledgeable of the plant systems and routinely perform walkdowns of the plant systems looking for abnormalities such as leaks in piping systems. By performing routine walkdowns, they are more familiar with the location of piping systems and can therefore perform a VT-2 examination in a more timely manner. Plant operators have a keen sense of duty while performing their daily rounds to ensure that plant systems are operating correctly and reporting problems such as leakage from piping systems. System Engineering perform routine walkdowns as part of their job to ensure that plant systems are operating correctly. Their experience, responsibility, and knowledge should be used and can help the plant perform system pressure testing in a more timely and responsible manner which helps to ensure that plant piping systems operate correctly which is the intent of performing ASME Section XI system pressure tests. Using these personnel will also allow SQN to eliminate the need

for hiring additional personnel certified tc the requirements of IWA-2300 especially during refueling outages when system pressure tests are typically performed. Since the VT-2 examination is an examination for the evidence of leakage, the use of plant personnel , certified to the alternative requirements, who typically perform this type of examination during their daily job duties will not compromise the quality or safety of the VT-2 examinations.

Alternative Requirement: SQN will use ASME Code Case N-546 as alternative requirements for the qualification of VT-2 examination personnel.

ATTACHMENT 1: INDUSTRY CONTACTS

NOTE: This Attachment is a separate document and may be revised and included herein without a revision to the Program Basis Document.

INDUSTRY CONTACTS

NAME	PLANT	PHONE
Becky Badham	Farley	205-899-5156 x3598
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Brian Andrie	Perry	216-259-3737 x7654
Dennis Devay	Perry	216-259-3737 x7656
Joe Kusnicki	LaSalle	815-357-6761 x2575
Kieth Moser	Braidwood	815-458-3803
Mike Sears	Braidwood	815-458-2801 x2251
Roger Sagmoe	Braidwood	815-458-2801 x2363
Jay Smith	Bryon	815-234-5441 x2604
Frank Schaaf (Chairman, XI PT WG)	Ginna	716-724-8681
Mike Parerak	ANO	501-964-8852
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ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
1	47W801-1 47W803-2	2	Main Steam system piping and components described below (excluding S/Gs): * From Steam Generator 1 to FCV-1-15, FCV-1-4 and FCV-1-147. * From Steam Generator 2 to FCV-1-11 and FCV-1-148. * From Steam Generator 3 to FCV-1-22 and FCV-1-149. * From Steam Generator 4 to FCV-1-16, FCV-1-29 and FCV-1-150.	Code Case N-498 hydro test alternative	Inservice	Inservice
1	47W803-2 47W803-3	2 and 3	Main Steam supply to Turbine Driven Auxiliary Feed Water Pump terry turbine as described below: * From FCV-1-15 and FCV-1-16 through TDAFW Pump A-S terry turbine to roof exhaust and steam traps at drain tank.	Inservice	Inservice	Code Case N-498 (Class 2) or N-498-1 (Class 3) hydro test alternative
1	47W801-2 47W862-1	2	Steam Generator Blowdown system piping and components described below: * From Steam Generator 1 to FCV-1-7 (including sample line). * From Steam Generator 2 to FCV-1-14. * From Steam Generator 3 to FCV-1-25. * From Steam Generator 4 to FCV-1-32.	Code Case N-498 hydro test alternative	Inservice	Inservice
3	47W803-1 47W803-2	2	Main Feed Water system piping and components described below (boundary extends to non-isolated portions of Auxiliary Feedwater system): * From Steam Generator 1 (including S/G shell) to 3-832, 3-373 and FCV-3-33. * From Steam Generator 2 (including S/G shell)to 3-922 and FCV-1-14. * From Steam Generator 3 (including S/G shell) to 3-921 and FCV-1-25. * From Steam Generator 4 (including S/G shell) to FCV-1-32.	Code Case N-498 hydro test alternative	Inservice	Inservice

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
3	47W803-2	2	Auxiliary Feed Water system piping and components as described below: * Normally isolated Class 2 portion of AFW to Steam Generator 2. From 3-831 and 3-872 to 3-922. * Normally isolated Class 2 portion of AFW to Steam Generator 3. From 3-830 and 3-871 to 3-921.	Code Case N-498 hydro test alternative	Functional	Functional
3	47W803-2	3	Auxiliary Feed Water system piping and components as described below: * From 3-805 through MDAFW Pump A-A to 3-831 and 3-832. * From 3-806 through MDAFW Pump B-B to 3-830 and 3-833. * From 3-810 through TDAFW Pump A-S to 3-871, 3-872, 3-873 and 3-874	Functional	Functional	Code Case N-498-1 hydro test alternative
26	47W850-10	2	Fire Protection system piping and components as described below: * Portion of system penetrating containment from FCV-26-243 to 26-1296.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative
31	47W865-5	2	Reactor Building Instrument Room Chilled Water system piping and components as described below: * Portion of system penetrating containment from FCV-31C-224 to FCV-31C-225 and 31C-734. * Portion of system penetrating containment from FCV-31C-222 to FCV-31C-223 and 31C-752. * Portion of system penetrating containment from FCV-31C-231 to FCV-31C-232 and 31C-697. * Portion of system penetrating containment from FCV-31C-229 to FCV-31C-230 and 31C-715.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
31	47W865-8	3	Shutdown Board Rooms Chilled Water system piping and components as described below: * From Compression Tank and Air Separator through CW Pump A-A, Water Chiller Package A-A and Air Handling Units 1A-A and 2A-A to pump suction. * From Compression Tank and Air Separator through CW Pump B-B, Water Chiller Package B-B and Air Handling Units 1B-B and 2B-B to pump suction.	Inservice	Inservice	Code Case N-498-1 hydro test alternative
59	47W856-1	2	Demineralized Water system piping and components as described below: * Portion of system penetrating containment from 59-522 to 59-633.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative
61	47W814-2	2	Ice Condenser system piping and components as described below: * Portion of system penetrating containment from FCV-61-191 to FCV-61-192 and 61-533. * Portion of system penetrating containment from FCV-61-193 to FCV-61-194 and 61-680.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
62	47W809-1 47W809-2 47W811-1	2	Chemical and Volume Control system piping and components as described below: * Letdown line from FCV-62-70 through Regenerative Hx, Letdown Hx (TCV-61-79 and LCV-62-118 aligned to VCT) and VCT to charging pump suction header. * Exces letdown from transition piece and RCP seal return line from RCP seals through Seal Water Hx to connection to charging pump suction header. * Charging pump suction header to the first normally closed valve. * From charging pumps suction header through Centrifugal Charging Pumps A-A and B-B (including miniflow line) to seal injection check valves 62-560, 561, 562 and 563, charging check valves 62-716 and 717, pressurizer spray isolation valve 62-84 and high head safety injection valves FCV-63-39 and FCV-63-40.	Code Case N-498 hydro test alternative (Unit 1)	Code Case N-498 hydro test alternative (Unit 2)	Inservice
62	47W809-2 47W809-5	3	Chemical and Volume Control system piping and components as described below: * Boric Acid Tanks A, B and C through Boric Acid Transfer Pumps and Boric Acid Blender to FCV-62-138, 62-929, 62-935, 62-936 and FCV-62-144.	Inservice	Code Case N-498-1 hydro test alternative	Inservice

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
62	47W809-1 47W809-2 47W809-3 47W809-4 47W811-1 47W819-1	3	Chemical and Volume Control system piping and components as described below: * From TCV-62-79 through Mixed Bed Demineralizers A and B and Cation Bed Demineralizer to 62-1075 (in return line to Reactor Coolant Filter). * From LCV-62-118 (and various other inputs) through Holdup Tanks A and B, Holdup tank Recirculation Pump and Gas Stripper Pumps A, B and C to 62-926A.	Not Required	Not Required	Not Required
63	47W811-1	2	Safety Injection system piping and components as described below: * High head saftey injection line from FCV-63-39 and FCV-63-40 to RCS Class 1/2 boundary valve 62-581. * From FCV-63-5, FCV-63-6 and FCV-63-7 and FCV-63-11 through Safety Injection Pumps A-A and B-B (including miniflow to FCV-63-3) to RCS Class 1/2 boundary valves 63-543, 63-545, 63-547, 63-549, 63-553 and 63-555. * Cold Leg Accumulators 1 through 4 to RCS Class 1/2 boundary valves 63-622, 62-623, 63-624 and 63-625. * Low head safety injection lines (RHR) INSIDE containment including containment sump and RHR return lines.	Functional	Functional	Code Case N-498 hydro test alternative

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYSTEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
63	47W811-1 47W812-1 47W830-1 47W855-1	2	Safety Injection system piping and components as described below: * Refueling Water Storage Tank and piping to first normally closed valve (i.e., HCV-74-34) and CVCS, SIS, RHR, and CS pump suction isolation valves LCV-62-135, FCV-62-136, FCV-63-5, FCV-63-1, FCV-72-21 and FCV-72-22.	Inservice	Inservice	Code Case N-498 hydro test alternative
67	47W832-3 47W845-1 47W845-2 47W845-3 47W845-4 47W845-5 47W845-6 47W860-1	2 and 3	Essential Raw Cooling Water system piping and components as described below (Class 2 only at containment penetrations): * ERCW Screen Wash Pumps A-A, B-B, C-B and D-A to associated traveling screens. * ERCW Pumps J-A, K-A, Q-A and R-A through Train A supply header, associated heat exchangers (except Containment Spray Hx), coolers, Train A discharge header to FCV-67-364. * ERCW Pumps L-B, M-B, N-B and P-B through Train B supply header, associated heat exchangers (except Containment Spray Hx), coolers, Train B discharge header to FCV-67-365.	Inservice	Inservice	Code Case N-498 (Class 2) or N-498-1 (Class 3) hydro test alternative
67	47W845-2	3	Essential Raw Cooling Water system piping and components as described below: * Containment Spray Heat Exhangers A and B. * Normally closed ERCW supply to MDAFW Pumps A-A (FCV-3-116A to FCV-3-116B) and B-B (FCV-3-126A to FCV-3-126B). * Normally closed ERCW supply to TDAFW Pump A-S (FCV-3-136A to FCV-3-136B and FCV-3-179A to FCV-3-179B).	Functional	Functional	Code Case N-498-1 hydro test alternative

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
68	47W813-1 47W809-1 47W810-1 47W811-1 47W859-2	1	Reactor Coolant system piping and components as described below: * All Class 1 piping and components.	Leakage every RFO	Leakage every RFO	Leakage every RFO and Code Case N-498 hydro test alternative
70	47W859-4	2	Component Cooling system piping and components as described below): * From FCV-70-143 through Excess Letdown Hx to FCV-70-85.	Inservice	Inservice	Code Case N-498 hydro test alternative
70	47W859-1 47W859-2 47W859-3 47W859-4	2 and 3	Component Cooling system piping and components as described below (Class 2 only at containment penetrations): * CCS Pumps A-A and B-B through Train A supply header, associated heat exchangers (except Excess Letdown Hx), coolers, Surge Tannk, Thermal Barrier Booster Pumps and Train A return header to CCS pumps. * CCS Pump C-S through Train B supply header, associated heat exchangers, coolers, Surge Tannk and Train B return header to CCS pumps.	Inservice	Code Case N-498 (Class 2) or N-498-1 (Class 3) hydro test alternative	Inservice
70	47W859-1	3	Component Cooling system piping and components as described below: * Piping between normally closed valve pairs on the CCS pump discharge header and CCS heat exchanger discharge header.	Functional	Code Case N-498-1 hydro test alternative	Functional
72	47W812-1	2	Containment Spray system piping and components as described below: * Containment Spray ring headers from FCV-72-39 and FCV-72-2 to spray nozzles and RHR Spray ring headers from FCV-72-41 and FCV-72-40 to spray nozzles.	Not Required	Not Required	Hydrostatic (unimpaired flow method)

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
72	47W812-1	2	Containment Spray system piping and components as described below: * From FCV-72-22 and FCV-72-23 through CS Pump A-A and CS Heat Exchanger A-A to FCV-72-39 and 72-502. * From FCV-72-20 and FCV-72-21 through CS Pump B-B and CS Heat Exchanger B-B to FCV-72-2 and 72-504.	Code Case N-498 hydro test alternative	Functional	Functional
74	47W810-1 47W811-1	2	Residual Heat Removal system piping and components as described below: * Containment sump including piping and components to first isolation valve FCV-63-72 and FCV-63-73.	Not Required	Not Required	Hydrostatic (visual unimpaired flow method)
74	47W810-1 47W811-1 47W812-1	2	Residual Heat Removal system piping and components as described below: * From FCV-63-1, FCV-63-72, FCV-63-73, FCV-72-20, FCV-72-23 and FCV-74-21 through RHR Pump A-A and RHR Heat Exchanger A-A to HCV-74-34, FCV-74-28, FCV-72-40, FCV-63-8 hot leg injection line containment penetration and cold leg injection lines containment penetrations. * From FCV-74-24 through RHR Pump B-B and RHR Heat Exchanger B-B to FCV-74-28, FCV-72-41 and FCV-63-11. * Normally isolated piping in the heat exchanger bypass line from HCV-74-34 to HCV-74-36 and HCV-74-37. * Normally isolated piping in the RHR letdown line from 74-530 and 74-531 to FCV-62-83.	Code Case N-498 hydro test alternative	Functional	Functional
77	47W809-7 47W830-1	2	Waste Disposal system piping and components as described below: * Portion of system penetrating containment from FCV-77-9 to FCV-77-10 and 84-512.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative

ATTACHMENT 2
PRESSURE TEST SCHEDULE

SYS TEM	DRAWING	ASME CLASS	BOUNDARY	TYPE OF PRESSURE TEST		
				1st PERIOD	2nd PERIOD	3rd PERIOD
77	47W851-1	2	Floor and Equipment Drains system piping and components as described below. * Portion of system penetrating containment from FCV-77-127 to FCV-77-128.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative
77	47W851-1	3	Floor and Equipment Drains system piping and components as described below: * From Elevation 593' drain through the Crane Wall.	Unimpaired Flow Test	Unimpaired Flow Test	Unimpaired Flow Test
78	47W855-1	3	Spent Fuel Pool Cooling system piping and components as described below: * From Spent Fuel Pool suction strainers through Spent Fuel Pit Pumps, Spent Fuel Pit Heat Exchangers and Demineralizer to Spent Fuel Pit discharge diffuser.	Inservice	Inservice	Code Case N-498-1 hydro test alternative
78	47W855-1	2	Spent Fuel Pool Cooling system piping and components as described below: * Portion of system penetrating containment from 78-557 to 78-558. * Portion of system penetrating containment from 78-560 to 78-561.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative
81	47W819-1	2	Primary Water system piping and components as described below: * Portion of system penetrating containment from FCV-81-12 to 81-502.	Code Case N-522 App. I test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative
43	47W881-5 47W881-6	2	Containment Penetrations X-93 and X-103.	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative	Code Case N-522 App. J test alternative