VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES
FOURTH TEN YEAR INTERVAL UPDATE

Pursuant to 10 CFR 50.55a(f)(4)(ii), Virginia Electric and Power Company (Dominion) submits the fourth interval Inservice Testing (IST) Programs for Surry Power Station Units 1 and 2. Included with the IST Programs is a summary of changes from the third interval to the fourth interval for each unit. The IST Programs for the fourth interval were updated to comply with the appropriate revisions of the ASME Code for Operation and Maintenance of Nuclear Power Plants and include the 1997 Addenda, the 1998 Edition, the 1999 Addenda and the 2000 Addenda. The IST Programs and the summary of changes for Units 1 and 2 are included as attachments.

The relief requests contained in the fourth interval programs require NRC review and approval before they can be implemented. For Surry Unit 1 there are nine relief requests for pumps (P-1 through P-9), and six relief requests for valves (V-1 through V-6). For Surry Unit 2 there are seven relief requests for pumps (P-1 through P-7), and five relief requests for valves (V-1 through V-5). The fourth testing interval starts on May 10, 2004 for both units; therefore, we request NRC approval of the IST Programs' relief requests by April 30, 2004. The remaining portions of the IST Programs are within the provisions of the Code and require no NRC approval for implementation.

If you have any questions or require additional information, please contact Mr. Gary D. Miller at (804) 273-2771.

Very truly yours,

L. N. Hartz
Vice President – Nuclear Engineering

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Commitments made in this letter: None

Attachments
1. Summary of Changes
2. IST Program
3. System Drawings

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ATTACHMENT 1

SURRY UNIT 1
INSERVICE TESTING PROGRAM
FOURTH TESTING INTERVAL UPDATE SUMMARY

VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)

SURRY UNIT 1
INSERVICE TESTING PROGRAM
FOURTH TESTING INTERVAL UPDATE SUMMARY

The Surry Unit 1 ASME Inservice Testing (IST) Program for Pumps and Valves has been updated for the fourth 10 year testing interval which starts on May 10, 2004. The Unit 2 IST program has the same fourth testing interval start date as Unit 1.

This update is required every 10 years by the Code of Federal Regulations, 10 CFR 50.55a(f)(4)(ii) which states in part that the IST programs "must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months prior to the start of the 120-month interval." The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, the 1998 Edition, the 1999 Addenda and the 2000 Addenda. The Code reference became effective on October 28, 2002 and applies to the fourth IST interval for Surry Unit 1. The Surry Unit 1 IST program has been updated to comply with these edition and addenda. There are two changes in the new Code (one for pumps and one for valves) that have a significant impact on the fourth 10 year testing interval IST program.

Significant Code Change for Pumps

In addition to the quarterly tests, the new Code requires that a pump test be performed every 24 months using pressure instrumentation more accurate (0.5%) than that required for the quarterly tests (2.0%) and that the test be performed within 20% of the pump design flow. This new test is called a comprehensive pump test. Also, if a pump is replaced or refurbished to "like new" or original condition, the Code requires that we measure five points along the pump curve where system resistance can be varied, before putting the pump inservice using the 0.5% pressure instrumentation. All 41 pumps in the Unit 1 IST program will be affected by these new requirements.

There are two sets of pumps where the required flow for the comprehensive tests (within 20% of design flow) cannot be achieved. The flow for the containment spray pumps and the outside recirculation spray pumps can only be established in their test loops which restricts flow to less then 80% (within 20%) of design flow. Relief Requests P-8 and 9 address these cases. The remaining relief requests (P-1 through P-7) were brought forward from Interval 3. These relief requests have been updated to the new Code requirements and rearranged to accommodate a new format for the pump table.

Significant Code Change for Valves

The new Code has some substantial changes from previous Code editions in the area of check valve testing. The new Code requires that check valves be tested in both directions, even if they have a safety function in only one direction. There are 156 check valves in the current Surry Unit 1 IST program. Of these 156 valves, 101 have a safety function in only one direction. New test procedures need to be developed or existing test procedures revised for these check valves in order for the fourth interval IST Program to be in compliance with the new Code. The Unit 2 IST program has 138 check valves with 88 valves having a safety function in only one direction.

Interval 4 IST Program Update Summary

Below is a section by section summary of changes between the third interval IST program and the fourth interval IST program for Surry Unit 1.

Section 1.0 INTRODUCTION

The starting and ending dates for the fourth interval are described.

Section 2.0 GENERAL PROGRAM DEVELOPMENT

References to Section XI, 1989 Edition and OM Parts 6 and 10 OMa-1988 Addenda were replaced by references to ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, 1998 Edition, 1999 Addenda and 2000 Addenda. Also, "cold shutdown" was changed to "safe shutdown" in the statements describing the Code required scope of components to be included in the IST program. No scope changes are being made to the Interval 4 IST program as a result of Code change from "cold shutdown" to "safe shutdown."

Section 2.1 Program Scope

The Code references were updated.

Section 2.2 Program Update

Minor editorial changes were made.

Section 2.3 Program Relief Requests

This section was deleted along with Relief Request G-1. Relief Request G-1 excluded the ANII from the inservice testing process as required by Section XI, IWA-2110, Duties of the Inspector. The new Code does not have responsibilities for the ANII.

Section 3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

Section 3.1 Program Development Philosophy

The Code references were updated and redundant verbiage regarding the Code was deleted.

Section 3.2 Program Implementation

This section was expanded to describe the new Code grouping for pumps and additional testing requirements. There are substantial differences between the requirements of the current Code for pump testing (OM Part 6, OMa-1988) and the new Code (ISTB). Below is a summary of these differences.

ISTB divides pumps into Group A pumps and Group B pumps. These groups are defined as:

> Group A pumps - pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations
>
> Group B pumps - pumps in standby systems that are not operated routinely except for testing

Group A and B pumps must be tested every 3 months except where a relief request has been submitted extending the test interval. The test frequency did not change from the previous Code. For the quarterly Group A pump tests, differential pressure, flow, vibration and speed (for variable speed pumps) must be measured with flow being within 20% of design flow if practicable. For the quarterly Group B tests, differential pressure, flow, and speed (for variable speed pumps) must be measured with flow being within 20% of design if practicable. Note that vibration need not be measured for Group B tests. If testing within 20% of design flow is not practicable, it will be noted in the IST program plan.

Pumps lacking the required fluid inventory (e.g., inside and outside recirculation spray pumps) need only be tested once every 24 months per ISTB-3430. This requirement has not changed from the previous Code.

ISTB requires additional tests called comprehensive tests. Comprehensive tests require that the pressure instruments have an accuracy of 0.5% instead of the 2% required for the Group A and B tests, and by the old Code. The accuracy requirements for flow and vibration remain the same for the comprehensive tests.

Also, ISTB describes a preservice comprehensive test and an inservice comprehensive test. The preservice comprehensive test is described in ISTB-3100 which states in part,

(a) For centrifugal and vertical line shaft pumps in systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow. A pump curve shall be established based on the measured points. At least one point shall be designated as the reference point(s). Data taken at the reference point will be used to compare the results of inservice tests. A pump curve need not be established for pumps in systems where resistance cannot be varied.

The preservice comprehensive test must be performed before a new pump is placed into service or after a major overhaul of an existing pump. The inservice comprehensive test must be performed every 24 months with the 0.5% pressure gauges. Only one point on the pump curve (within 20% of design flow) need be verified for the comprehensive tests.

Section 3.3 Program Administration

Redundant verbiage was deleted.

Section 3.4 Pump Reference List

Information concerning the pump groups was added.

Section 3.5 Pump Inservice Test Table

The format of the Pump Inservice Test Table was changed to allow the table to be generated directly from the pump database. Also, columns for pump group, test flow path and status of the reference flows were added. In the table, the comprehensive test requirements were added. These tests have the prefix "C_" to distinguish them from the quarterly test requirements. An extensive note section was added after the table to explain why the 20% of design flow is not achieved for some of the pumps.

Unit 1 Pump No.	Comments/Program Change
1-CC-P-1A 1-CC-P-1B	In Relief Request P-5, references to two points and a straight line approximation were replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria. Note 1 was added to explain why the 20% of design flow may not be achieved for the quarterly tests. Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-19 from Interval 3 has been replaced in part by Relief Request P-5 for Interval 4.

Unit 1 Pump No.	Comments/Program Change
1-CC-P-2A 1-CC-P-2B	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-22 from Interval 3 has been replaced by Relief Request P-7 for Interval 4. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
1-CH-P-1A 1-CH-P-1B 1-CH-P-1C	Program Change: Comprehensive tests have been added to be performed every 24 months. Also, Note 2 was added to explain why the 20% of design flow is not achieved for the quarterly tests.
1-CH-P-2A 1-CH-P-2B	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-21 from Interval 3 has been replaced by Relief Request P-6 for Interval 4. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
1-CS-P-1A 1-CS-P-1B	The test loop does not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing. Therefore, Relief Request P-8 was added to address these issues. Also, Note 3 was added to explain why the 20% of design flow is not achieved for the tests. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy. Relief Request P-8 and Note 3 were added to allow testing within 50% of design flow instead of the 20%, and to perform a preservice test at two points on the pump curve instead of five as required by Code. Because the containment spray pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
1-EE-P-1A 1-EE-P-1C 1-EE-P-1D 1-EE-P-1F	Program Change: Comprehensive tests have been added to be performed every 24 months. Because the diesel fuel transfer pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
1-FW-P-2 1-FW-P-3A 1-FW-P-3B	Program Change: Comprehensive tests have been added to be performed every 24 months. Because the auxiliary feedwater pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
1-RH-P-1A 1-RH-P-1B	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-7 from Interval 3 has been replaced by Relief Request P-2 for Interval 4. The basis of the relief request remains unchanged from Interval 3.

Unit 1 Pump No.	Comments/Program Change
1-RS-P-1A 1-RS-P-1B	The inside recirculation pumps lack the required fluid inventory to perform testing. Per the Code, a comprehensive test needs to be performed every 24 months. There is no Code requirement for a Group B test for these pumps. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy.
1-RS-P-2A 1-RS-P-2B	The outside recirculation pumps lack the required fluid inventory to perform testing. Per the Code, a comprehensive test needs to be performed every 24 months. There is no Code requirement for a Group B test for these pumps. The test loop does not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing. Therefore, Relief Request P-9 was added to address these issues. Note 4 was added to explain why the 20% of design flow is not achieved for the comprehensive tests. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy. Relief Request P-9 and Note 4 were added to allow testing within 64% of design flow instead of the 20% and to perform a preservice test at one point on the pump curve instead of five as required by Code.
1-SI-P-1A 1-SI-P-1B	Program Change: Comprehensive tests have been added to be performed every 24 months. Also, Note 5 was added to explain why the 20% of design flow is not achieved for the quarterly tests. Because the low head safety injection pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Program Change: Comprehensive tests have been added to be performed every 24 months. Because the emergency service water pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests. Relief Request P-11 from Interval 3 has been replaced by Relief Request P-3 for Interval 4. The commitments in the Interval 3 relief request to test monthly, and to trend to the next scheduled test were eliminated. Also, the hydraulic acceptance criteria have changed.
1-SW-P-10A 1-SW-P-10B	Program Change: Comprehensive tests have been added to be performed every 24 months.
1-VS-P-1A 1-VS-P-1B 1-VS-P-1C 1-VS-P-1D 1-VS-P-1E	Program Change: Comprehensive tests have been added to be performed every 24 months.

Unit 1 Pump No.	Comments/Program Change
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	In Relief Request P-4, references to two points and a straight line approximation were replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria. Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-17 from Interval 3 has been replaced by Relief Request P-4 for Interval 4.

Section 3.6 Pump Test Program Relief Requests

The NRC approved the third interval relief requests that are referenced in the following table for use for the third interval. All relief requests for the fourth testing interval have to be approved by the NRC regardless of their approval status from the third interval.

During the course of Interval 3, certain relief requests were withdrawn. The relief request numbers for Interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 1 Relief Request	Program Change
P-1	Relief Request P-1 establishes a minimum reference value of 0.05 ips to be used for vibration testing. A table was added listing the pumps that currently have at least one vibration location with a measured reference value less then 0.05 inches per second. The basis for relief was expanded to include experience gained from the predictive maintenance program and a description of the predictive maintenance program. In the alternate testing section, references to the predictive maintenance program and 10 CFR 50.55a(a)(3)(i) were added.
P-2	Relief Request P-2 was P-7 in the interval 3 IST program. This relief request allows 1-RH-P-1A and B to be tested during cold shutdowns. The basis was expanded for the Interval 4 version.
P-3	Relief Request P-3 was P-11 in the interval 3 IST program and applies to the emergency service water pumps 1-SW-P-1A, B and C. The hydraulic acceptance criteria changed from Part 6, OMa-1988 to the new Code for the quarterly Group B tests. The new Code defines an acceptable range between 0.9 and 1.1 of the reference flow or differential pressure. There is no alert range. The old Code had an acceptable range of 0.95 to 1.1 of the reference flow or differential pressure, with an alert range of 0.93 to 0.95. Because the criteria were relaxed, commitments that were made to justify expanding the acceptable range in the Interval 3, P-11 could be eliminated. The commitments in P-11 that were eliminated include monthly testing and trending to the next scheduled test. Also, the acceptable range in the new Code is wider than the expanded acceptable range in the Interval 3, P-11. Reference to Code Case OMN-9 was added.

Unit 1 Relief Request	Program Change
P-4	Relief Request P-4 was P-17 in the interval 3 IST program and applies to 1-VS-P-2A to E. References to two points and a straight line approximation were replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria.
P-5	Relief Request P-5 was P-19 in the interval 3 IST program and applies to 1-CC-P-1A and B. References to two points and a straight line approximation were replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria.
P-6	Relief Request P-6 was P-21 in the interval 3 IST program and applies to 1-CH-P-2A and B. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
P-7	Relief Request P-7 was P-22 in the interval 3 IST program and applies to 1-CC-P-2A and B. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
P-8	Relief Request P-8 was added to the IST Program. The test loops for pumps 1-CS-P-1A and B do not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing.
P-9	Relief Request P-9 was added to the IST Program. The test loops for pumps 1-RS-P-2A and B do not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing.

Section 3.7 Alternative Testing for Non-Code Pumps.

This section deals with pumps that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code pumps. Relief from Code provisions is not required for non-Code pumps. However, cases where the Code provisions are not met are document in this section. The Code references were updated in this section.

Unit 1 Non-Code Alternative Testing	Comments/Program Change
PNC-1	PNC-1 applies to 1-EE-P-1A, 1C, 1D and 1F. The Code references were updated and reference to a lower limit on the vibration reference value (0.05 ips) was added.

Section 4.0 VALVE INSERVICE TESTING PROGRAM DESCRIPTION

Section 4.1 Program Development Philosophy

A portion of the program development philosophy description was replaced by similar verbiage from the pump section to maintain consistency.

Section 4.2 Program Implementation

The Code references were updated and reference to the check valve disassembly sampling plan in GL 89-04 was deleted. This sampling plan is included in the new Code.

Section 4.3 Program Administration

This section was revised to more clearly describe the administrative responsibilities.

Section 4.4 Valve Inservice Test Table

The Code references were updated. The new Code requires that check valves be tested in both directions, even if they have a safety function in only one direction. Also, the Code states that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." These requirements are new with the 1997 Addenda, 1998 Code Edition, 1999 and 2000 Addenda and are responsible for most of the changes in the valve program.

Unit 1 Valve No.	Comments/Program Change
1-CC-001 1-CC-058 1-CC-059	These check valves are on the CC supply lines to the RCPs. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pumps. This verbiage was added to Reactor Refueling Justification RRV-10.
1-CC-177	The requirement to test check valves to the partially open position was deleted from the new Code. Program change: The requirement to test to the partially open position every three months was deleted.
1-CC-181 1-CC-185	These manual valves are on the CC return lines from the RHR heat exchangers. The new Code has a five year test interval for manual valves. However, the NRC changed this test interval from five years to two years in the Code of Federal Regulations that became effective on October 28, 2002. The test interval in the old Code was three months. These valves were tested every reactor refueling and were included in RRV-10 for Interval 3. RRV-10 was replaced by RRV-9 for Interval 4. The manual valves were removed from RRV-9 because the Code change made the deferral unnecessary. Program change: The test interval was changed from reactor refueling to 24 months.
1-CC-224 1-CC-233 1-CC-242	These check valves are on the CC supply lines to the containment recirculation air coolers. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor containment air recirculation coolers. This verbiage was added to RRV-11.

Unit 1 Valve No.	Comments/Program Change
1-CC-805	This check valve is on the makeup line to the charging pump seal cooling water surge tank. The open test frequency was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Program change: A close test was added. To verify the close position, this valve will be radiographed on a reactor refueling frequency as described in Relief Request V-6. The open test interval was changed from cold shutdown to reactor refueling.
1-CC-1105 1-CC-1106 1-CC-1107 1-CC-1188 1-CC-1189 1-CC-1190	These valves are on the CC supply to the RCP thermal barriers. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pump thermal barriers. This verbiage was added to RRV-7.
1-CC-LCV-101	This tank level control valve is on the makeup line to the charging pump seal cooling water surge tank. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. The NRC has not yet approved code Case OMN-8 for use. Therefore, relief from the Code requirement is necessary. Program Change: The stroke time requirement was removed per Relief Request V-1.
1-CH-076 1-CH-092	These check valves are on the boric acid transfer pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added to be performed every three months.
1-CH-225 1-CH-227 1-CH-229	These check valves are on the emergency and manual emergency boration lines. The open test frequency is unchanged from Interval 3. However, the test frequency discussion in RRV-20 was revised to clarify the point that if the reactor coolant boric acid concentration drops below 100 ppm, quarterly testing to the open position will be deferred until the next refueling outage. Program change: A close test was added. To verify the close position, this valve will be radiographed on a reactor refueling frequency as described in Relief Request V-5.

Unit 1 Valve No.	Comments/Program Change
1-CH-228	This manual valve is on the manual emergency boration line. The valve was tested every cold shutdown and was included in CSV-19 for Interval 3. CSV-19 was replaced by CSV-11 for Interval 4. The manual valve was removed from CSV-11 because the Code change made the deferral unnecessary. Program change: The test interval was changed from cold shutdown to every 24 months.
1-CH-230	This check valve is on the discharge from the volume control tank. It is subject to leak testing based on a recommendation stemming from the Type 1 Report NP-2778 entitled "CHECK VALVE LEAKAGE TO VCT" dated 5/11/93. The conclusions in NP-2778 were reevaluated in ET S 01-0149. It was determined that check valve 1-CH-230 does not have a leakage requirement and does not have to be leak tested. The valve should have a "functional operability verification test." Therefore, the valve will continue to be tested to the close position but the leak test will be deleted. Program change: The leak test was deleted.
1-CH-256 1-CH-265 1-CH-274	These check valves are on the charging pump recirculation lines. The valves are currently tested to the open position every three months. Program change: The close test was added to be performed every three months.
1-CH-258 1-CH-267 1-CH-276	These check valves are on the charging pump discharge lines. The valves are currently tested to the open position every reactor refueling and to the close position every three months. Program change: The requirement to test to the partially open position every three months was deleted.
1-CH-309	This check valve is on the main charging supply header. The valve is currently tested to the close position every cold shutdown. Program change: The open test was added. Normal operation of the charging system during power operation verifies that the valve opens. This verbiage was added to Cold Shutdown Justification CSV-20.
1-CH-FCV-1113A	This flow control valve is on the alternate emergency boration line. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. The NRC has not yet approved code Case OMN-8 for use. Therefore, relief from the Code requirement is necessary. Program Change: The stroke time requirement was removed per Relief Request V-1.

Unit 1 Valve No.	Comments/Program Change
1-CH-FCV-1114A	This flow control valve is on the primary grade water supply line. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Relief Request V-1.
1-CS-045	This check valve isolates the RWST cooling system return line. The valve is currently disassembled and examined every reactor refueling to verify the close position. Program change: The open test was added. Normal operation of the RWST cooling system verifies that the valve opens. Relief Request V-4 was added and seeks relief from having to perform the disassembly during the reactor refueling outage as required by the Code, and instead perform the disassembly during power operation on an 18 month interval.
1-EE-015 1-EE-019 1-EE-028 1-EE-035	These check valves are on the diesel fuel oil pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added. These valves will be disassembled and examined to verify the close position on an 18 month interval as described in Non-Code Alternative Test VNC-6. Because these valves are non-ASME Class valves, relief from disassembly during the refueling outage period is not required.
1-EG-040 1-EG-042 3-EG-040 3-EG-042	These check valves isolate the diesel generator air receiver tanks. The valves are currently tested to the close position every three months. Program change: The open test was added. The open position is verified by normal system operation.
1-FW-010 1-FW-041 1-FW-072	These check valves isolate main feedwater flow. The valves is currently disassembled and examined on a rotating basis every reactor refueling to verify the close position. Program change: The open test was added. The open position is verified during normal operation of the main feedwater system. This verbiage was added to RRV-13.
1-FW-027 1-FW-058 1-FW-089	These check valves are on the auxiliary feedwater headers and are located near the main feedwater headers. The valves are currently tested to the open position every cold shutdown. Program change: The close test was added to be performed every cold shutdown as described in CSV-21.

Unit 1 Valve No.	Comments/Program Change
1-FW-131 1-FW-133 1-FW-136 1-FW-138	These check valves are on the auxiliary feedwater headers and are located near the containment penetrations. The valves are currently tested to the open position every cold shutdown. Program change: The close test was added to be performed every reactor refueling as described in RRV-19. The open test frequency was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a).
1-FW-144 1-FW-159 1-FW-174	These check valves are on the auxiliary feedwater pump recirculation lines. The valves are currently disassembled and examined on a rotating basis to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings using the current disassembly and examination as described in RRV-15.
1-FW-148 1-FW-163 1-FW-178	These check valves are on the auxiliary feedwater lines that supply the pump oil coolers. The valves are currently disassembled and examined on a rotating basis to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings using the current disassembly and examination as described in RRV-15.
1-FW-272 1-FW-273 1-FW-309 1-FW-310	These check valves are on the auxiliary feedwater cross-connect headers. The valves are currently tested to the open position every reactor refueling. Program change: The close test was added to be performed every reactor refueling as described in RRV-12.
1-FW-FCV-1478 1-FW-FCV-1488 1-FW-FCV-1498 1-FW-HCV-155A 1-FW-HCV-155B 1-FW-HCV-155C	These non-Code Class control valves regulate main feedwater flow and bypass feedwater flow. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Non-Code Alternative Test VNC-5.
1-IA-928 1-IA-952	These non-Code Class check valves are on the bottled air supply lines to valves 1-RC-PCV-1455C and 1456. Program change: The open test was added to be performed every reactor refueling as described in non-Code Alternative Test VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.

Unit 1 Valve No.	Comments/Program Change
1-IA-938 1-IA-939	These check valves isolate the instrument air to containment lines. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Normal operation of the containment instrument air system verifies that 1-IA-939 opens. This verbiage was added to RRV-6. Valve 1-IA-938 will be exercised open every reactor refueling.
1-IA-947 1-IA-948	These non-Code Class check valves are on the bottled air supply lines to valves 1-MS-SOV-102A and B. Program change: The open test was added for 1-IA-947 and the close test added for 1-IA-948 to be performed every reactor refueling as described in VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.
1-IA-949 1-IA-953	These non-Code Class check valves are on the bottled air supply lines to valves 1-RC-PCV-1455C and 1456. Program change: The close test was added to be performed every reactor refueling as described in VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.
1-MS-087 1-MS-120 1-MS-158	These manual valves are on the main steam supply lines to the terry turbine. Program change: The test interval was changed from three months to every 24 months.
1-MS-NRV-101A 1-MS-NRV-101B 1-MS-NRV-101C	These check valves are the main steam non-return valves. The valves are currently tested to the close position on a rotating basis every reactor refueling. Program change: The open test was added. The open position is verified by the normal operation of the main steam system. This verbiage was added to VNC-4.

Unit 1 Valve No.	Comments/Program Change
1-MS-RV-101A 1-MS-RV-101B 1-MS-RV-101C	These pressure control valves are on the main steam lines. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Also, to perform the fail safe test the valves must be stroked and observed locally. The main steam valve house is a hot environment and hazardous to the test personnel. The test frequency is being extended from every three months to reactor refueling per RRV-24. The open test requirement is being deleted. These valves operate as pressure control valves in the open position. Per ISTC-1200, the pressure regulating function is excluded from the testing requirements of ISTC. Program Change: The stroke time requirement was removed per Relief Request V-1 and the open test deleted. The exercise frequency is being extended from three months to every reactor refueling per RRV-24.
1-RC-160	This check valve isolates the primary grade water supply line to the pressurizer relief tank. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Following each outage, the PRT is normally filled with water supplied from the PG makeup system. Filling the PRT verifies that valve 1-RC-160 opens. This verbiage was added to RRV-6.
1-RH-MOV-1700 1-RH-MOV-1701 1-RH-MOV-1720A 1-RH-MOV-1720B	The RHR suction valves 1-RH-MOV-1700 and 1701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled. The RHR return isolation valves 1-RH-MOV-1720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals. Program change: The test interval was changed from cold shutdown to reactor refueling as described in RRV-18.

Unit 1 Valve No.	Comments/Program Change
1-RM-003	This check valve isolates the return line from the radiation monitoring cabinet to containment. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Normal operation of the radiation monitoring system during power operation verifies that valve 1-RM-3 opens. This verbiage was added to RRV-6.
1-SI-025	This check valve is on the RWST supply line to the charging pumps. The valve is currently tested to the open and close positions every reactor refueling. Program change: The exercise test to the partially open position was deleted.
1-SI-046A 1-SI-046B	These check valves are on the RWST supply lines to the LHSI pumps. The valves are exercised open every refueling outage by verifying full flow through the valves. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-2. The exercise test to the partially open position was deleted.
1-SI-047 1-SI-056	These check valves are on the LHSI supply line from the containment sump. The valves are currently disassembled and examined to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings by the current disassembly and examination as described in RRV-14.
1-SI-050 1-SI-058	These check valves are on the discharge lines of the LHSI pumps. The valves are currently tested to the open position every reactor refueling and to the close position during cold shutdowns. The open test can only be performed during reactor refuelings as described in RRV-2. The new Code (ISTC-3522(a)) states that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Therefore, the close test that was performed during cold shutdowns will now be performed during reactor refuelings. Program change: The test interval for the close test was changed from cold shutdown to reactor refueling as described in RRV-2.

Unit 1 Valve No.	Comments/Program Change
1-SI-053 1-SI-061	These valves are on the LHSI pump recirculation lines and can be tested to the full open position every three months. Due to the piping configuration, valves 1-SI-53 and 61 are normally back pressure tested with valves 1-SI-50 and 58. The valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a separate local back pressure leak test for these valves at a test interval that is different than the interval for valves 1-SI-50 and 58. Program change: The test interval for the close test was changed from cold shutdown to reactor refueling as described in RRV-2.
1-SI-107 1-SI-109 1-SI-128 1-SI-130 1-SI-145 1-SI-147	These are the SI accumulator discharge check valves. They are tested to the open position by discharging an accumulator and recording the impact of the disk when it fully opens and strikes the back seat. Accelerometers are used to detect the impact. These instruments can also be used to detect the impact when the valves close. One train is instrumented each outage. Program change: The close test was added. The close position will be verified during reactor refuelings using non-intrusive techniques as described in RRV-3.
1-SI-224 1-SI-225 1-SI-226 1-SI-227 1-SI-228 1-SI-229	These check valves isolate the safety injection lines at the containment penetrations. The valves are currently tested to the open position every reactor refueling. Program change: The close test was added to be performed every reactor refueling as described in RRV-4. The close position will be verified by a back pressure leak test.
1-SI-234	This check valve is on the nitrogen supply line to the SI accumulators. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Charging of the SI accumulators during each refueling outage is adequate verification of the open position. This verbiage was added to RRV-6.
1-SI-410	This check valve is on the RWST supply line to the charging pumps. The valve is currently tested to the open position every reactor refueling. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-5. The exercise test to the partially open position was deleted.

Unit 1 Valve No.	Comments/Program Change
1-SW-012	This manual valve isolates the service water supply header from the non-safety related river water make-up pumps. Program change: The test interval was changed from cold shutdown to every 24 months.
1-SW-246 1-SW-247 1-SW-248 1-SW-249 1-SW-250 1-SW-251 1-SW-252 1-SW-253	These check valves are on the recirculation spray heat exchanger service water supply and return vents. In the current test procedure, force is applied using a mechanical hooking device to separate the disk from the valve seat, and the disk is verified to move freely to the open position. This test verifies both the open and close positions. Program change: The close test was added to be performed every three months. The current test procedure will be used to verify the close position.
1-SW-262 1-SW-268	These check valves are on the charging pump service water pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-22.
1-SW-264 1-SW-265	These manual valves are on the control room condenser water backup strainer bypass lines. Program change: The test interval was changed from three months to every 24 months.
1-SW-313 1-SW-323 2-SW-333	These check valves are on the control room condenser pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added to be performed every three months. By verifying that the non-running pump is not rotating backward, the close position is verified.
1-SW-773 1-SW-778	These check valves are on the control room condenser pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added. The close position will be verified on a reactor refueling frequency by performing a back pressure leak test as described in Relief Request V-3.

Unit 1 Valve No.	Comments/Program Change
1-SW-839 1-SW-840	These check valves are on the control room condenser pump discharge lines. The valves are currently disassembled and examined to verify the open position on a reactor refueling frequency as allowed by the Interval 3 Relief Request V-53. Program change: The close test was added. The close position will be verified on a reactor refueling frequency by disassembly and examination as described in Relief Request V-3.
1-SW-PCV-100A 1-SW-PCV-100B 1-SW-PCV-100C 1-SW-PCV-100D 1-SW-PCV-100E 1-SW-PCV-101A 1-SW-PCV-101B 1-SW-PCV-101C 1-SW-PCV-101D 1-SW-PCV-101E	These air operated valves control the flow of control room condenser. water. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Relief Request V-1.
1-SW-TCV-108A 1-SW-TCV-108B 1-SW-TCV-108C	These air operated valves control the service water temperature across the charging pump lube oil coolers. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Relief Request V-1.
1-VP-012	This check valve is on the condenser air removal discharge line to containment. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6.
1-VS-285 1-VS-571	These manual valves isolate the control room chiller water cross connect line. Program change: The test interval was changed from three months to every 24 months.
1-VS-672	This check valve is on the control room chilled water system discharge header. The valve is currently tested to the open position every three months. Program change: The close test was added. The close position will be verified on a reactor refueling frequency by performing a back pressure leak test as described in Relief Request V-3.

Section 4.5 Valve Test Program Relief Requests

The NRC approved the third interval relief requests that are referenced in the following table for use for the third interval. All relief requests for the fourth testing interval have to be approved by the NRC regardless of their approval status from the third interval.

During the course of Interval 3, certain relief requests were withdrawn. The relief request numbers for Interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 1 Interval 4 Relief Request	Unit 1 Interval 3 Relief Request	Comments
V-1	V-47	Relief Request V-1 supersedes V-47 and requests using Code Case OMN-8. ISTC 1.2(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves. However, if these valves have a safety function to fail to an open or close position, then the testing requirements for power-operated valves are imposed, which includes the measurement of stroke time. Code Case OMN-8 eliminates the stroke time requirements for control valves that only have a fail-safe function. Relief Request V-47 required that the stroke time be measured and compared to a maximum allowable stroke time, but it eliminated the acceptance range around a reference stroke time for the valves listed in the relief request. Program Change: Relief Request V-1 supersedes V-47 and eliminates the stroke time requirements for control valves that only have a fail-safe function.
V-2	V-52	Relief Request V-2 used to be V-52 and pertains to the RWST isolation valves. Program Change: The Code reference was updated. Also, a description of the evaluation to be used instead of repair or replacement, was added to Relief Request V-2 for the RWST isolation valves. In the alternate testing section, 10 CFR 50.55a(a)(3)(i) was added as a reference.

Unit 1 Interval 4 Relief Request	Unit 1 Interval 3 Relief Request	Comments
V-3	V-53	Relief Request V-3 replaced V-53 and requests relief from performing disassembly and examination, and back pressure leak testing of the control room chilled water and condenser water pump discharge line check valves 1-SW-773, 778, 839 and 840, and 1-VS-672 during refueling outages. Instead, the disassembly and examination, and back pressure leak testing will be performed on a reactor refueling frequency (nominally every 18 months). Program Change: Valves 1-SW-773 and 778, and 1-VS-672 were added to the relief request. Also, the Code reference was updated and in the alternate testing section and 10 CFR 50.55a(a)(3)(i) was added as a reference.
V-4	NA	Relief Request V-4 replaces Reactor Refueling Justification RRV-9. V-4 requests relief from performing disassembly and examination of the RWST cooling system check valve 1-CS-45 during refueling outages. Instead, the disassembly and examination will be performed on a reactor refueling frequency (nominally every 18 months). Program change: Relief Request V-4 was added to the IST program and the test interval was changed from every refueling to a refueling frequency (nominally every 18 months).
V-5	NA	Relief Request V-5 was added to request relief from performing radiographs on the emergency and manual emergency boration line isolation check valves during reactor refueling outages. The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c). Program change: Relief Request V-5 was added to the IST program to allow the radiographs to be performed on a refueling frequency (nominally every 18 months).

Unit 1 Interval 4 Relief Request	Unit 1 Interval 3 Relief Request	Comments
V-6	NA	Relief Request V-6 was added to request relief from performing radiographs on the charging pump seal cooling surge tank makeup line check valve during reactor refueling outages. The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c). Program change: Relief Request V-6 was added to the IST program to allow the radiographs to be performed on a refueling frequency (nominally every 18 months).
	V-5	Relief Request V-5 pertained to the disassembly and examination of the main feedwater check valves 1-FW-10, 41 and 72 using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-13. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-20	Relief Request V-20 pertained to the disassembly and examination of the LHSI suction check valves 1-SI-47 and 56 using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-14. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-26	Relief Request V-26 described using the sampling plan in NUREG-1482 when placing instrumentation on the SI accumulator discharge check valves for non-intrusive testing. For example, if three trains are being tested, only the check valves on one train need be instrumented while all three trains are flowed. According to the NRC in NUREG-1482, "Relief is not required because the method meets the "other positive means" of the Code if each valve in the group is flow tested at the regular frequency." Program Change: The descriptions of the sampling plan were rolled into Reactor Refueling Justification RRV-3, and the relief request was removed from the program.
	V-27	Relief Request V-27 allowed the check valves on the SI to hot leg lines to be tested as a pair of valves in series. In the new Code, ISTC-5223 allows for the testing of check valves in series. Program change: The relief request was removed from the IST program.

Unit 1 Interval 4 Relief Request	Unit 1 Interval 3 Relief Request	Comments
	V-41	Relief Request V-41 described the disassembly and examination of the check valves on the auxiliary feedwater pump recirculation lines and pump oil cooler lines using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-15. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-42	Relief Request V-42 described the disassembly and examination of the check valves on the main steam supply lines to the turbine driven auxiliary feedwater pump using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-16. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-43	Relief Request V-43 described the disassembly and examination of the check valves on the containment spray pump discharge lines using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-17. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-47	Program change: Replaced by V-1.
	V-51	When the NRC approved the 1989 Edition of Section XI, which referenced OM Part 10, OMa-1988, they did so with two provisions pertaining to leak testing Appendix J, containment isolation valves. These provisions required that in addition to the requirements of Appendix J, the licensee must establish maximum allowable leak rates for each valve or group of valves, and initiate corrective action if these limits are exceeded. When the NRC approved the new Code, they dropped these provisions. Relief Request V-51 allowed us to exit an outage even if we exceed the maximum leakage limit for a containment isolation valve. This relief is no longer necessary. Program Change: The relief request was removed from the IST program.
	V-52	Program change: Replaced by V-2.
	V-53	Program change: Replaced by V-3.

Section 4.6 Valve Test Program Cold Shutdown Justifications

During the course of interval 3, certain cold shutdown justifications were either withdrawn or replaced. The cold shutdown justification numbers for interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 1 Interval 4 CS Just	Unit 1 Interval 3 CS Just	Comments/Program Change
CSV-1	CSV-1	Program Change: None.
CSV-2	CSV-6	Program Change: None.
CSV-3	CSV-7	Program Change: None.
CSV-4	CSV-8	Program Change: None.
CSV-5	CSV-11	Program Change: None.
CSV-6	CSV-13	Program Change: None.
CSV-7	CSV-15	Program Change: None.
CSV-8	CSV-16	Program Change: None.
CSV-9	CSV-17	Program Change: None.
CSV-10	CSV-18	Program Change: None.
CSV-11	CSV-19	Check valves 1-CH-225, 227 and 229 were moved to RRV-20 and Relief Request V-5 because of the new close test. Manual valve 1-CH-228 was removed from CSV-11 because the Code test interval for manual valves changed from three to 24 months. Program Change: No change for 1-CH-MOV-1380. Valves 1-CH-225, 227, 228 and 229 were removed from CSV-11.
CSV-12	CSV-21	Program Change: None.
CSV-13	CSV-25	Program Change: None.
CSV-14	CSV-27	Program Change: None.
CSV-15	CSV-28	Program Change: None.
CSV-16	CSV-31	Program Change: None.
CSV-17	CSV-33	Program Change: None.
CSV-18	CSV-35	Program Change: None.

Unit 1 Interval 4 CS Just	Unit 1 Interval 3 CS Just	Comments/Program Change
CSV-19	CSV-36	Program Change: None.
CSV-20	CSV-37	Program Change: Verbiage was added stating that the normal charging isolation check valve 1-CH-309 is verified open during normal system operation.
CSV-21	CSV-4	Valves 1-FW-131, 133, 136 and 139 were moved to RRV-19. Valves 1-FW-27, 58 and 89 were moved to CSV-21 and a close test was added. The basis for deferring the open test to cold shutdown remains the same from Interval 3. Testing to the close position requires that the auxiliary feedwater path be isolated, the upstream piping vented, and leakage collected at a drain. It is impractical to perform both the open test and the close test during normal operation. Program change: A close test was added along with verbiage describing the impracticality of performing the close test every three months.
	CSV-9	Program change: The test interval for the RHR suction valves 1-RH-MOV-1700 and 1701 was changed from cold shutdown to reactor refueling as described in RRV-18. CSV-9 was deleted.
	CSV-10	Program change: The test interval for the RHR return isolation valves 1-RH-MOV-1720A and 1720B was changed from cold shutdown to reactor refueling as described in RRV-18. CSV-10 was deleted.
	CSV-30	Program change: A close test was added for check valve 1-CC-805 which is on the makeup line to the charging pump seal cooling water surge tank. To verify the close position, this valve will be radiographed as described in Relief Request V-6. The open test interval was changed from cold shutdown to reactor refueling as described in RRV-21.
	CSV-34	Program change: Manual valve 1-SW-012 was removed from CSV-34 because the Code test interval for manual valves changed from three to 24 months. CSV-34 was deleted.

Section 4.7 Valve Test Program Reactor Refueling Justifications

During the course of interval 3, certain reactor refueling justifications were either withdrawn or replaced. The reactor refueling justification numbers for interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-1	RRV-1	Program change: Reference to testing the charging pump discharge check valves 1-CH-258, 267 and 276 to the partially open position was deleted and reference to the current three month close test was added.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-2	RRV-2	Program change: Close test for LHSI pump suction from RWST check valves 1-SI-046A and B was added. Verification is by disassembly and examination. Test interval for the LHSI pump discharge valves (1-SI-050 and 058) close test was changed from cold shutdown to reactor refueling to match the test interval of the open test. Test interval for the LHSI pump recirculation valves (1-SI-053 and 061) close test was changed from cold shutdown to reactor refueling to match the test interval of the discharge valves.
RRV-3	RRV-3	RRV-3 describes the test deferrals for the SI accumulator discharge check valves 1-SI-107, 109, 128, 130, 145 and 147. In the Interval 3 IST program, Relief Request V-26 described a sampling plan that is used with acoustic monitoring to verify the open position. This description was moved to RRV-3 because the sampling plan is included in the new Code. Therefore, relief to use the sampling plan is no longer necessary. A close test was added for these valves. The close position can be verified by acoustic monitoring, so this description was added to the basis. The Interval 3 basis contained justification for not performing a partial open test every cold shutdown. Because partial open tests for check valves are no longer required by Code, this justification was deleted. Program change: The close test was added. The close position will be verified by acoustic monitoring.
RRV-4	RRV-4	RRV-4 describes the test deferrals for the cold leg and hot leg, high and low head safety injection check valves. Valves 1-SI-224, 225, 226, 227, 228 and 229 only have a safety function in the open direction. However, the new Code requires testing of check valves in both directions. Therefore, a discussion of the close test for these valves was added. Also, Code references were updated. Program change: The close test was added for valves 1-SI-224, 225, 226, 227, 228 and 229.
RRV-5	RRV-5	RRV-5 describes the test deferrals for the charging pump suction from the RWST cross-tie line check valves 1-SI-25 and 410. Program change: The close test was added for valve 1-SI-410. Disassembly and examination will verify the close position.
RRV-6	RRV-6	RRV-6 describes the test deferrals for check valves 1-IA-938 and 939, 1-RC-160, 1-RM-3, 1-SI-234 and 1-VP-12 that serve as Appendix J, containment isolation valves. Program change: The open test was added.
RRV-7	RRV-7	Program change: Reference to normal operation verifying the open position for CC supply to RCP thermal barrier check valves 1-CC-1105, 1106, 1107, 1188, 1189 and 1190 was added.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-8	RRV-8	The charging pump suction from the VCT check vale 1-CH-230 is tested to the open position every three months and to the close position every reactor refueling. Reference to the current open test was added for consistency with other justifications. The leak test requirement was deleted and the basis enhanced to describe the back pressure closure test. Program change: The leak test requirement was deleted.
RRV-9	RRV-10	RRV-9 describes the test deferrals for the component cooling water supply to RHR heat exchanger check valves 1-CC-176 and 177. Manual valves 1-CC-181 and 185 were removed from the justification because the test interval for manual valves is now 24 months per the new Code. Program change: Manual valves 1-CC-181 and 185 were removed from the justification.
RRV-10	RRV-11	Program change: Reference to normal operation verifying the open position for CC supply to RCP cooler check valves 1-CC-1, 58 and 59 was added.
RRV-11	RRV-12	Program change: Reference to normal operation verifying the open position for CC supply to containment air recirculation cooler check valves 1-CC-224, 233 and 242 was added.
RRV-12	RRV-13	RRV-12 describes the test deferrals for the auxiliary feedwater pump discharge check valves 1-FW-142, 157 and 172, and the auxiliary feedwater cross-connect line check valves 1-FW-272, 273, 309 and 310. A close test was added for the cross-connect valves because of the new Code requirements. The basis for deferring the open test to reactor refueling did not change. Program change: The close test was added for valves 1-FW-272, 273, 309 and 310.
RRV-13		RRV-13 describes the disassembly and examination of the main feedwater check valves 1-FW-10, 41 and 72, and replaces Relief Request V-5. The sampling plan described in V-5 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to normal operation verifying the open was added.
RRV-14		RRV-14 describes the disassembly and examination of the LHSI pump suction check valves 1-SI-47 and 56, and replaces Relief Request V-20. The sampling plan described in V-20 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to the close position being verified by disassembly and examination was added.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-15		RRV-15 describes the disassembly and examination of the auxiliary feedwater pump recirculation check valves 1-FW-144, 159 and 174, and oil cooler check valves 1-FW-148, 163 and 178, and replaces Relief Request V-41. The sampling plan described in V-41 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to the close position being verified by disassembly and examination was added.
RRV-16		RRV-16 describes the disassembly and examination of the main steam supply to the turbine driven auxiliary feedwater pump check valves 1-MS-176, 178 and 182, and replaces Relief Request V-42. The sampling plan described in V-42 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: None.
RRV-17		RRV-17 describes the disassembly and examination of the containment spray and outside recirculation spray pump discharge check valves 1-CS-13, 24, 105 and 107, and 1-RS-11 and 17, and replaces Relief Request V-43. The sampling plan described in V-43 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: None.
RRV-18		RRV-18 replaces CSV-8 and 9. The test interval for the RHR system motor operated isolation valves was changed from cold shutdown to reactor refueling. The RHR suction valves 1-RH-MOV-1700 and 1701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled. The RHR return isolation valves 1-RH-MOV-1720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals. Program change: The test interval was changed from cold shutdown to reactor refueling.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-19	CSV-4	Valves 1-FW-131, 133, 136 and 139 were moved to RRV-19 from CSV-4 in Interval 3. The close test was added and is impractical to perform at cold shutdown. Back pressure testing these valves requires that the auxiliary feedwater headers be isolated, the upstream piping vented and the downstream piping be pressurized. It is estimated that it will take one crew an entire shift to perform the back pressure test for these valves. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. The test frequency for the open test was changed from cold shutdown to reactor refueling to coincide with the test frequency of the close test. This change is allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Program change: The test frequency for the open test was changed from cold shutdown to reactor refueling and the justification for the close test was added.
RRV-20		The open test frequency for the emergency and manual boration line isolation check valves 1-CH-225, 227 and 229 is unchanged from Interval 3. However, the test frequency discussion was revised to clarify the point that if the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.
RRV-21		Program change: The open test frequency for check valve 1-CC-805 was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests."
RRV-22		Check valves 1-SW-262 and 268 are on the discharge lines from the service water pumps to charging pumps and can be seated by pressure from the running pump in parallel with the non-running pump. However, there are check valves located upstream of 1-SW-262 and 268, and there are no vents or drains located between the check valves in series to collect leakage or to connect a pressure gauge. Therefore, with the current piping configuration the check valves cannot be verified to close and seat with flow. They will be disassembled and examined. Program change: The close test was added. Disassembly and examination will verify the close position.
RRV-23	RRV-14	RRV-23 defers the exercise tests for the recirculation spray heat exchanger service water isolation MOVs. Stroking the MOVs every three months degrades the valve seat leak tightness. Program change: None.

Unit 1 Interval 4 RR Just	Unit 1 Interval 3 RR Just	Comments/Program Change
RRV-24		RRV-24 defers the exercise tests for the main steam header discharge to atmosphere pressure control valves 1-MS-RV-101A, B and C. These valves are located above the main steam lines on the top floor of the main steam valve house. The top floor of the main steam valve house is exposed to heat loads from the main steam lines and is a high temperature environment, particularly in the summer time. If the plant is at power, upstream isolation valves must be closed manually. Then the valves must be stroked and observed locally when performing the fail-safe test. Given the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel. To reduce the number of times that the test personnel are exposed to this hazard, the valves will be tested every refueling outage. It is important that the valves be tested when the valve body is at operating temperature to ensure that the actuator assembly functions properly. The main steam system operates at a nominal temperature of 555°F. Therefore, the exercise test will be performed either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage. Program change: The test interval was changed from every three months to every reactor refueling. These valves will be exercised closed every reactor refueling either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

Section 4.8 Alternative Testing for Non-Code Valves.

This section deals with valves that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code valves. Relief from Code provisions is not required for non-Code valves. However, cases where the Code provisions are not met are document in this section. The Code references were updated in this section.

Unit 1 Interval 4 Non-Code Alter Test	Unit 1 Interval 3 Non-Code Alter Test	Comments/Program Change
VNC-1	VNC-1	Instrument air valves 1-IA-928, 947 and 952 must close to ensure that bottled air is available to actuate the main valves (1-RC-PCV-1455C, 1-RC-PCV-1456, and 1-MS-SOV-102A and B). Valves 1-IA-948, 949 and 953 must open to allow bottled air to reach the main valves. Valves 1-IA-928, 947 and 952 will be tested open and valves 1-IA-948, 949 and 953 will be tested close by stroking the main valves with normal instrument air. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. Program Change: The open test was added for valves 1-IA-928, 947 and 952, and the close test was added for valves 1-IA-948, 949 and 953, to be performed every refueling by stroking the main valves with normal instrument air.
VNC-2	VNC-3	Program change: None.
VNC-3	VNC-4	Program change: None.
VNC-4	VNC-5	The close position for the main steam non-return valves is verified by measuring the motor current while the stem travels to the valve disk as the plant cools down from power operation. Any increase in current will indicate a stuck disk. The equipment used to gather the data use to be called VOTES. Program change: The more generic term "diagnostic equipment" replaced "VOTES." Also, reference to the open position being verified by normal system operation was added, and the Code references were updated.

Unit 1 Interval 4 Non-Code Alter Test	Unit 1 Interval 3 Non-Code Alter Test	Comments/Program Change
VNC-5		The main feedwater regulating valves 1-FW-FCV-1478, 1488 and 1498, and main feedwater bypass regulating valves 1-FW-FCV-155A, B and C, are valves used for system control and have a safety function to fail close. ISTC 1.2(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves. However, if these valves have a safety function to fail to an open of closed position, then the testing requirements for power-operated valves are imposed, which includes the measurement of stroke time. Code Case OMN-8 eliminates the stroke time requirements for control valves that only have a fail-safe function. Program Change: Non-Code Alternative Test VNC-5 was added to the IST program and eliminates the stroke time requirements for these control valve.
VNC-6		VNC-6 pertains to the check valves on the diesel fuel oil pump discharge lines. The close test was added with disassembly and examination being the preferred method for verifying the close position. These valves can be disassembled and examined while the plant is operating. From a work planning standpoint, the worst time to schedule the removal of a diesel fuel oil supply train from service for the purpose of valve disassembly is during a refueling outage. Most major work activities can only be performed during the refueling outage. These activities are carefully planned to maximize the availability of safety related equipment and to preserve plant safety margin. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valves on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage. Because these valves are non-ASME Class valves, relief from disassembly during the refueling outage period is not required. Program change: Non-Code Alternative Test VNC-6 was added to the IST program. These valves will be disassembled and examined to verify the close position on an 18 month interval instead of during refueling outages.

Section 5.0 Reporting of Inservice Test Results

The Code references were updated.

ATTACHMENT 2

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

SURRY POWER STATION

UNIT 1

INSERVICE TESTING PROGRAM PLAN

FOR PUMPS AND VALVES

FOURTH INSPECTION INTERVAL

MAY 10, 2004 - MAY 10, 2014

REVISION 0

TABLE OF CONTENTS

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

1.0 INTRODUCTION

This Pump and Valve Inservice Test (IST) Program Plan is applicable to the Surry Power Station Unit 1 which received its construction permit on June 25, 1968 and began commercial operation on December 22, 1972. Surry Power Station Unit 1 is a Pressurized Water Reactor located in Surry County, Virginia. The plant employs a Westinghouse Electric Corp. Nuclear Steam System.

The IST Program Plan is comprised of two subprograms – the IST Program for Pumps and the IST Program for Valves. The development, implementation and administration of these programs are detailed in subsequent sections. This IST Program Plan applies to the fourth 10-year IST interval for Surry Power Station Unit 1 which starts on May 10, 2004 and ends May 10, 2014.

Surry Power Station requested an exemption from Section XI of the ASME Code to extend the Surry Unit 1 second 10-year IST interval for pumps and valves from December 22, 1992 to May 10, 1994 to coincide with the end of the second 10-year IST interval for Unit 2. The NRC in a letter dated February 16, 1993 granted this extension in the form of an exemption to the Code of Federal Regulations, 10CFR50.55a(g)(4). For IST, 10CFR50.55a(f) subsequently replaced 10CFR50.55a(g).

2.0 GENERAL PROGRAM DEVELOPMENT

The Code of Federal Regulations, paragraph 10CFR50.55a(f) describes the inservice testing requirements for pumps and valves which are classified as ASME Code Class 1, Class 2 and Class 3. Paragraph 10CFR50.55a(f)(4)(ii) states that,

> "Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed in paragraph (b) of this section."

The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, the 1998 Edition, the 1999 Addenda and the 2000 Addenda. The Code reference became effective on October 28, 2002 and applies to the fourth IST interval for Surry Unit 1. The IST Program for the fourth IST interval complies with these edition and addenda.

The ASME OM Code requires that the owner of each nuclear power plant prepare a "plan" for testing and inspection of systems and components under the jurisdiction of 10CFR50.55a. The Code, Subsection ISTA, General Requirements, Subsection ISTB, Inservice Testing of Pumps, and Subsection ISTC, Inservice Testing of Valves apply to the IST program. Subsections ISTA, ISTB and ISTC establish the IST program scope with the provision that the rules apply only to ASME Code Classes 1, 2 and 3 as stated by the NRC in the Code of Federal Regulations.

In accordance with ASME OM Code, the following are required to be included in the testing program:

1) Centrifugal and positive displacement pumps that are provided with an emergency power source and required to perform a specific function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

2) Active or passive valves (and their actuating and position indicating systems) which are required to perform a specific function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

3) Pressure relief devices that protect systems or portions of systems which perform a required function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions including Generic Letter 89-04 and NUREG-1482. Other than these guides, there is no specific guidance for developing the IST Program scope of testing. Therefore, a set of rules was established by which the scope of the Surry ASME IST Program is determined including components that are to be included and the extent and type of testing required for each. Based on these rules, the philosophy and assumptions used in determining the test requirements for selected pumps and valves were documented.

2.1 PROGRAM SCOPE

In the course of developing the Program scope, each of the significant safety systems included within the ISI Class boundaries and certain safety systems outside of the ISI Class boundaries (such as the emergency diesel fuel oil transfer system) were evaluated with respect to the function of each component and the need for its operability as it relates to the scope of the ASME OM Code. Supporting documents used include,

Final Safety Analysis Report (FSAR),
Technical Specifications,
Past program correspondence,
Operating Procedures (normal, emergency and abnormal) and
Plant System Descriptions.

The sequence followed during the development effort was as follows:

1) Each of the plant systems was subjected to an overview to determine any potential active safety function as described in the scope statement. Those systems with no safety functions related to the ASME OM Code scope were excluded from further consideration. Plant documents as well as operating staff comments were utilized in this phase.

2) For the remaining systems, flow diagrams were studied and any component that could possibly have an active or passive safety function (other than simply maintaining the pressure boundary) was identified for further evaluation.

3) The function of each component identified from the flow diagrams was determined based on available documentation, staff review or general experience of the evaluator. Testing requirements were derived based on the component function(s) and the applicable rule(s).

4) Available documents were reviewed and specific or implied component operational requirements were compared to the component functions.

5) The results of the steps described above were reviewed by several knowledgeable members of the plant staff and evaluated for accuracy and consistency, and compiled in an IST basis document. Based on this review, the final program scope was derived and the IST Program Plan developed.

2.2 PROGRAM UPDATE

During the fourth 10-year interval it is expected that the scope of the Program will occasionally be modified in response to unrelated activities including, but not limited to:

1) plant design changes,

2) changes in operating conditions (e.g. normal valve lineup) and

3) changes in accident mitigating procedures philosophy.

As a result, it is expected that the IST Program may be revised to ensure continued compliance with the Code requirements relating to the scope of the test program. The supervisor responsible for maintaining the IST Program is provided copies of plant modifications that are designated by Engineering to have a potential IST/ISI impact. Should a change require a Program revision, the IST Coordinator would then implement the change to the Program Plan and the appropriate test procedure(s) in a timely manner.

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 1 Technical Specification 4.0.5 describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 pumps. The Surry Unit 1 Inservice Testing (IST) Program for Pumps has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTB and Technical Specifications.

The scope of the program includes ASME Code Class 1, 2 and 3, and certain non-Code class pumps that are required to perform a specific function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition or mitigating the consequences of an accident.

ISTB defines the rules and requirements of inservice testing of Code Class 1, 2, and 3 pumps and states that each pump to be tested by the rules of this subsection shall be identified by the owner and listed in the plant records.

The purpose of the IST Program Plan is to identify the pumps that are considered by Virginia Electric and Power (Dominion) Company as having a safety function and are therefore subject to the testing requirements of ISTB. The intent of the Code is to assess operational readiness and detect potentially adverse changes in the mechanical condition of these pumps. The relief requests for the IST Program Plan identify Code requirements considered to be impractical, provide technical basis for the request and propose alternate testing when warranted.

3.2 PROGRAM IMPLEMENTATION

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. The Surry Power Station Unit 1 IST Program provides a schedule for testing safety-grade pumps and is implemented as part of normal periodic surveillance testing.

Reference data is gathered during initial surveillance tests. With the ASME OM Code, these initial reference tests can be a preservice test as described in ISTB-3100 or the first inservice test as described in ISTB-3200. ISTB-3100 requires that at least five points along the pump curve be measured for pumps where the system resistance can be varied. ISTB-3200 refers to Group A tests, Group B tests and comprehensive tests. Group A tests apply to Group A pumps which are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. Group B tests apply to Group B pumps which are pumps in standby systems that are not operated routinely except for testing. Comprehensive tests apply to both Group A and B pumps and require more accurate pressure instrumentation (0.5% versus 2% for the Group A and B tests), but are performed on a less frequent basis.

The Group A test parameters include differential pressure (or discharge pressure for positive displacement pumps), flow rate, vibration and speed for variable speed pumps. The Group B test parameters include differential pressure for pumps other than positive displacement pumps, flow rate and speed for variable speed pumps. Differential pressure need not be measured for positive displacement pumps. The Group A and B test parameters are typically measured with normal plant Instrumentation. If practicable, the Group A and B reference tests shall be performed within ± 20% of the pump design flow rate. If not practicable, the reference test shall be performed at the highest practical flow rate. Comprehensive test parameters include differential pressure (or discharge pressure for positive displacement pumps), flow rate, vibration and speed for variable speed pumps. The comprehensive reference test shall be performed within ± 20% of the pump design flow rate. Any deviation from this requirement for comprehensive tests requires a request for relief from Code provisions.

Group A and B inservice tests shall be performed every three months as required by Table ISTB-3400-1. Any deviation from this test frequency requires a request for relief from Code provisions. During subsequent surveillance tests, flow rate is normally selected as the independent test parameter and is set to match the reference flow rate. Other hydraulic and mechanical performance parameters are measured and evaluated against the appropriate reference values. The results of such evaluations determine whether or not corrective action is warranted. Comprehensive tests are performed every two years in a manner similar to the Group A and B inservice tests.

Each pump in the IST Program is tested according to a detailed test procedure. The procedure includes, as a minimum:

1) <u>References</u>: This section identifies references applicable to Technical Specifications and other necessary material as drawings.

2) <u>Purpose</u>: This section identifies test objectives.

3) <u>Initial Conditions</u>: Each procedure should identify those independent actions or procedures which shall be completed and station conditions which shall exist prior to use.

4) Precautions: Precautions should be established to alert the individual performing the task to those situations in which important measures should be taken early or where extreme care should be used to protect equipment and personnel. Cautionary notes applicable to specific steps in the procedure should be included in the main body of the procedure as appropriate and should be identified as such.

5) Instructions: The main body of a procedure should contain step by step instructions in the degree of detail necessary for performing a required test.

6) Acceptance Criteria: The ranges within which test data are considered acceptable are established and included in the test procedure. In the event that data fall outside the acceptable range, operator action is governed by approved station procedures.

Finally, it is recognized that the IST Program for Pumps sets forth minimum testing requirements. Additional testing is performed, as required, after pump maintenance or as determined necessary by personnel at Surry Power Station.

3.3 PROGRAM ADMINISTRATION

The engineering staff at Surry is responsible for the administration of the IST Program for Pumps. The operations staff is responsible for performing the periodic tests as required by this program. The IST Program for Pumps is implemented by station periodic test procedures.

3.4 PUMP REFERENCE LIST

This list gives a brief description of each pump identified in the Pump Inservice Test Program.

1-CC-P-1A	Component Cooling Water Pumps
1-CC-P-1B	Drawing: 11448-CBM-72D, Sheet 1

Description: These centrifugal pumps supply cooling water to transfer heat from heat exchangers containing reactor coolant or other radioactive fluids. The component cooling water pumps operate routinely during normal operation and are defined as Group A pumps.

1-CC-P-2A	Charging Pump Cooling Water Pumps
1-CC-P-2B	Drawing: 11448-CBM-71B, Sheet 2

Description: These centrifugal pumps supply cooling water to transfer heat from the charging pump mechanical seals. The charging pump cooling water pumps operate routinely during normal operation and are defined as Group A pumps.

1-CH-P-1A 1-CH-P-1B 1-CH-P-1C	High Head Safety Injection/Charging Pumps Drawing: 11448-CBM-88B, Sheet 2

Description: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system. The high head safety injection/charging pumps operate routinely during normal operation and are defined as Group A pumps.

1-CH-P-2A 1-CH-P-2B	Boric Acid Transfer Pumps Drawing: 11448-CBM-88A, Sheet 1

Description: These centrifugal pumps supply boric acid to the suction of the charging pumps for emergency boration. During normal operation they recirculate the contents of the Boron Injection Tank. The boric acid transfer pumps operate routinely during normal operation and are defined as Group A pumps.

1-CS-P-1A 1-CS-P-1B	Containment Spray Pumps Drawing: 11448-CBM-84A, Sheet 2

Description: These centrifugal pumps provide a cooled, chemically treated, borated spray to reduce containment pressure following a loss of coolant accident. The containment spray pumps are in a standby system and are defined as Group B pumps.

1-EE-P-1A 1-EE-P-1C 1-EE-P-1D 1-EE-P-1F	Emergency Diesel Generator Fuel Oil Transfer Pumps Drawing: 11448-FB-38A, Sheet 2

Description: These positive displacement pumps supply fuel oil to the emergency diesel generator fuel oil day tank which directly supplies the emergency diesel generator. The emergency diesel generator fuel oil pumps are in a standby system and are defined as Group B pumps.

1-FW-P-2 1-FW-P-3A 1-FW-P-3B	Auxiliary Feedwater Pumps Drawing: 11448-CBM-68A, Sheet 3

Description: These centrifugal pumps supply auxiliary feedwater to the steam generators following a loss of normal feedwater flow. The auxiliary feedwater pumps are in a standby system and are defined as Group B pumps.

1-RH-P-1A	Residual Heat Removal Pumps
1-RH-P-1B	Drawing: 11448-CBM-87A, Sheet 1

Description: These centrifugal pumps remove decay heat from the reactor core and the reactor coolant system during plant cool down. The residual heat removal pumps operate routinely during cold shutdowns and reactor refuelings and are defined as Group A pumps.

1-RS-P-1A	Inside Recirculation Spray Pumps
1-RS-P-1B	Drawing: 11448-CBM-84B, Sheet 1

Description: These vertical line shaft pumps supply a borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident. The inside recirculation spray pumps are in a standby system and are defined as Group B pumps. Also, the pump sumps are maintained dry. According to ISTB-3430, they require a comprehensive test at least once every two years. No quarterly testing is required. Because the pumps are inside containment, they will receive the comprehensive test during reactor refueling outages.

1-RS-P-2A	Outside Recirculation Spray Pumps
1-RS-P-2B	Drawing: 11448-CBM-84B, Sheet 2

Description: These vertical line shaft pumps supply borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident. The outside recirculation spray pumps are in a standby system and are defined as Group B pumps. Also, the pump sumps are maintained dry. According to ISTB-3430, they require a comprehensive test at least once every two years. No quarterly testing is required.

1-SI-P-1A	Low Head Safety Injection Pumps
1-SI-P-1B	Drawing: 11448-CBM-89A, Sheet 1

Description: These vertical line shaft pumps supply low pressure borated water to the reactor coolant system following a safety injection signal. The low head safety injection pumps are in a standby system and are defined as Group B pumps.

1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Emergency Service Water Pumps Drawing: 11448-CBM-71A, Sheet 1

Description: These deep draft pumps supply the required service water to the canal to provide for minimum safeguards operation in the unlikely event of a loss of site power coincident with a design basis accident. The emergency service water pumps are in a standby system and are defined as Group B pumps.

1-SW-P-10A 1-SW-P-10B	Charging Pump Service Water Pumps Drawing: 11448-CBM-71B, Sheet 1

Description: These centrifugal pumps provide cooling water for Charging Pump Cooling Water Systems. The charging pump service water pumps operate routinely during normal operation and are defined as Group A pumps.

1-VS-P-1A 1-VS-P-1B 1-VS-P-1C 1-VS-P-1D 1-VS-P-1E	Main Control Room Air Conditioning System Condenser Water Pumps Drawing: 11448-CBM-71D, Sheets 1 and 2

Description: These centrifugal pumps supply service water to the main control room air conditioning system chillers. The control room condenser water pumps operate routinely during normal operation and are defined as Group A pumps.

1-VS-P-2A 1-VS-P-2B 1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	Main Control Room Air Conditioning System Chiller Water Pumps Drawing: 11448-CBB-41A, Sheets 2 and 3

Description: These centrifugal pumps circulated chilled water to the main control room and switchgear room air handling units. The control room chiller water pumps operate routinely during normal operation and are defined as Group A pumps.

3.5 PUMP INSERVICE TEST TABLE

The Pump Inservice Test Table identifies the pumps to be tested, code classes, required test quantities and frequencies. Relief from test requirements is requested in cases where test requirements are determined to be impractical. Where relief is requested, technical justification is provided along with alternative test methods when applicable. Relief requests are contained in Section 3.6.

For non-Code pumps, a request for relief is not necessary when provisions of the Code are determined to be impractical. Section 3.7 contains a discussion of the testing requirements for non-Code pumps and descriptions of alternative testing in cases where the provisions of the Code are not met.

To aid the reader in interpreting the Pump Inservice Test Table, brief explanations of the table headings and abbreviations are provided below.

1) Pump Number - Each pump in the plant has a unique "mark" number that identifies the system to which the pump belongs.

2) Drawing and Sheet Number, Coordinate - The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.

3) ASME Class - ASME Code Class of each pump as per 10CFR50.55a and Regulatory Guide 1.26.

Note: NC is for non-Code pumps. These pumps are important to safety but are not in systems that are classified ASME Class 1, 2 or 3.

4) ISTB Group - Pump group as defined in ISTB-2000 where:

   Group A pumps - pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations and

   Group B pumps - pumps in standby systems that are not operated routinely except for testing.

5) Flow Path - The flow path used for the test can either be the normal flow path for the system, a recirculation flow path or a flow path dedicated to testing.

6) System Resist - Either FIXED for a test loop with a fixed system resistance or VARIABLE for a test loop with a system resistance that can be varied.

7) Test Type - The required ISTB test quantities. Test types with "C_" as a prefix represent comprehensive tests that are conducted every 24 months. Test types without the prefix "C_" represent either Group A or B tests that are conducted every three months unless the test

frequency has been deferred to cold shutdown or reactor refueling by a relief request. Examples of test type abbreviations are given below.

DEV_HEAD - developed pump head

DIFF_PRESSURE - differential pressure

DISCH_PRESSURE - discharge pressure

FLOW - flow

FLOW_TOTAL - flow total is the sum of branch flows

PUMP_SPEED - pump speed for variable speed pumps

VIB_(suffix) - vibration measured at a given bearing (e.g., IN for inboard bearing) and in a given orientation (e.g., HORZ for the horizontal direction)

8) Test Freq - The test frequency with the following abbreviations:

03 - the test will be performed every three months (Group A and B pump tests shall be performed every three months as required by Table ISTB-3400-1.)

CS - the test will be performed every cold shutdown (a relief request explains the need for deviating from Table ISTB-3400-1 test frequency requirements)

RR - the test will be performed every reactor refueling (a relief request explains the need for deviating from Table ISTB-3400-1 test frequency requirements)

24 - the test will be performed every 24 months (pumps with sumps that are maintained dry shall only have a comprehensive test performed every 2 years per ISTB-3430).

9) Ref Flow Status – ISTB-3300 requires that the reference flow rate be within 20% of pump design flow. The reference flow rate is the flow rate used to establish acceptance criteria. FULL (full flow) in this column indicates that the reference flow rate is within 20% of pump design flow. If the reference flow rate does not meet this requirement a note is provided at the end of the pump table with an explanation.

For Group A and B tests, ISTB-3300(e)(2) allows for testing outside the 20% range due to impracticality. For comprehensive tests, ISTB-

3300(e)(1) requires that the tests to be performed within the 20% range with no exceptions. Therefore, relief from Code provisions is required when testing outside the 20% range for comprehensive tests.

10) Relief Request - Relief requests are presented in Section 3.6.

11) Non-Code Alter Test - Non-Code alternative tests apply to pumps that are not ASME Code class 1, 2 or 3. These tests are alternatives to Code tests and are described in Section 3.7

FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CC-P-1A	11448-CBM-072D	1 OF 5	D5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		5	
								C_FLOW_TOTAL	24	FULL	5	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03		5	
								FLOW_TOTAL	03	NOTE 1	5	
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	COMPONENT COOLING WATER CENTRIFUGAL PUMP											
1-CC-P-1B	11448-CBM-072D	1 OF 5	C5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		5	
								C_FLOW_TOTAL	24	FULL	5	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03		5	
								FLOW_TOTAL	03	NOTE 1	5	
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03		1	
								VIB_IN_VERT	03		1	
								VIB_OUT_AX	03		1	
								VIB_OUT_HORZ	03		1	
								VIB_OUT_VERT	03		1	

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
	COMPONENT COOLING WATER CENTRIFUGAL PUMP											
1-CC-P-2A	11448-CBM-071B	2 OF 2	C7	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03		7	
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03		1	
								VIB_UP_MTR_VERT	03		1	
	COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL											
1-CC-P-2B	11448-CBM-071B	2 OF 2	C3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03		7	
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL											
1-CH-P-1A	11448-CBM-088B	2 OF 2	C8	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CH-P-1A	11448-CBM-088B	2 OF 2	C8	2	A	NORMAL	VARIABLE	SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
1-CH-P-1B	11448-CBM-088B	2 OF 2	C6	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
1-CH-P-1C	11448-CBM-088B	2 OF 2	C4	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CH-P-1C	11448-CBM-088B	2 OF 2	C4	2	A	NORMAL	VARIABLE	DIFF_PRESSURE	03			
								SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03		1	
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
1-CH-P-2A	11448-CBM-088A	1 OF 4	B7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03		6	
								FLOW	03	FULL		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
	BORIC ACID TRANSFER CENTRIFUGAL PUMP											
1-CH-P-2B	11448-CBM-088A	1 OF 4	B6	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03		6	
								FLOW	03	FULL		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03		1	
								VIB_IN_VERT	03		1	
	BORIC ACID TRANSFER CENTRIFUGAL PUMP											
1-CS-P-1A	11448-CBM-084A	2 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			

PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CS-P-1A	11448-CBM-084A	2 OF 3	C6	2	B	RECIRC	FIXED	C_TOTAL_FLOW	24	NOTE 3	8	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								TOTAL_FLOW	03	NOTE 3		
	CONTAINMENT SPRAY PUMP											
1-CS-P-1B	11448-CBM-084A	2 OF 3	B5	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_TOTAL_FLOW	24	NOTE 3	8	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								TOTAL_FLOW	03	NOTE 3		
	CONTAINMENT SPRAY PUMP											
1-EE-P-1A	11448-FB-038A	2 OF 3	C7	NC	B	NORMAL	FIXED	C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1
								C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE DISPLACEMENT PUMP											
1-EE-P-1C	11448-FB-038A	2 OF 3		NC	B	NORMAL		C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1

PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-EE-P-1C	11448-FB-038A	2 OF 3		NC	B	NORMAL		C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE DISPLACEMENT PUMP											
1-EE-P-1D	11448-FB-038A	2 OF 3	B6	NC	B	NORMAL	FIXED	C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1
								C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE DISPLACEMENT PUMP											
1-EE-P-1F	11448-FB-038A	2 OF 3	E6	NC	B	NORMAL	FIXED	C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1
								C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE DISPLACEMENT PUMP											
1-FW-P-2	11448-CBM-068A	3 OF 4	B8	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_PUMP_SPEED	24			
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			

PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-FW-P-2	11448-CBM-068A	3 OF 4	B8	3	B	RECIRC	VARIABLE	C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								PUMP_SPEED	03			
	AUXILIARY FEEDWATER STEAM DRIVEN CENTRIFUGAL PUMP											
1-FW-P-3A	11448-CBM-068A	3 OF 4	B6	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
	AUXILIARY FEEDWATER MOTOR DRIVEN CENTRIFUGAL PUMP											
1-FW-P-3B	11448-CBM-068A	3 OF 4	B5	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
	AUXILIARY FEEDWATER MOTOR DRIVEN CENTRIFUGAL PUMP											
1-RH-P-1A	11448-CBM-087A	1 OF 2	D7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-RH-P-1A	11448-CBM-087A	1 OF 2	D7	2	A	RECIRC	VARIABLE	DIFF_PRESSURE	CS		2	
								FLOW	CS	FULL	2	
								VIB_UP_MTR_AX	CS			
								VIB_UP_MTR_HORZ	CS			
								VIB_UP_MTR_VERT	CS			
	RESIDUAL HEAT REMOVAL PUMP											
1-RH-P-1B	11448-CBM-087A	1 OF 2	D4	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	CS		2	
								FLOW	CS	FULL	2	
								VIB_UP_MTR_AX	CS			
								VIB_UP_MTR_HORZ	CS			
								VIB_UP_MTR_VERT	CS			
	RESIDUAL HEAT REMOVAL PUMP											
1-RS-P-1A	11448-CBM-084B	1 OF 2	B7	2	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	INSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
1-RS-P-1B	11448-CBM-084B	1 OF 2	B4	2	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	INSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
1-RS-P-2A	11448-CBM-084B	2 OF 2	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	NOTE 4	9	

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-RS-P-2A	11448-CBM-084B	2 OF 2	C6	2	B	RECIRC	FIXED	C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	OUTSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
1-RS-P-2B	11448-CBM-084B	2 OF 2	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	NOTE 4	9	
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	OUTSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
1-SI-P-1A	11448-CBM-089A	1 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	NOTE 5		
	LOW HEAD SAFETY INJECTION VERTICAL LINE SHAFT PUMP											
1-SI-P-1B	11448-CBM-089A	1 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	NOTE 5		
	LOW HEAD SAFETY INJECTION VERTICAL LINE SHAFT PUMP											
1-SW-P-10A	11448-CBM-071B	1 OF 2	B8	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-SW-P-10A	11448-CBM-071B	1 OF 2	B8	3	A	NORMAL	VARIABLE	DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03		1	
	SERVICE WATER TO CHARGING PUMP CENTRIFUGAL PUMP											
1-SW-P-10B	11448-CBM-071B	1 OF 2	B3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	SERVICE WATER TO CHARGING PUMP CENTRIFUGAL PUMP											
1-SW-P-1A	11448-CBM-071A	1 OF 3	C4	3	B	NORMAL	FIXED	C_DIFF_PRESS	24		3	
								C_FLOW	24	FULL	3	
								C_VIB_UPGBX_AX	24			
								C_VIB_UPGBX_HOR	24			
								C_VIB_UPGBX_VER	24			
								DIFF_PRESSURE	03		3	
								FLOW	03	FULL	3	
	EMERGENCY SERVICE WATER VERTICAL LINE SHAFT PUMP											
1-SW-P-1B	11448-CBM-071A	1 OF 3	C4	3	B	NORMAL	FIXED	C_DIFF_PRESS	24		3	
								C_FLOW	24	FULL	3	
								C_VIB_UPGBX_AX	24			
								C_VIB_UPGBX_HOR	24			
								C_VIB_UPGBX_VER	24			
								DIFF_PRESSURE	03		3	
								FLOW	03	FULL	3	

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
	EMERGENCY SERVICE WATER VERTICAL LINE SHAFT PUMP											
1-SW-P-1C	11448-CBM-071A	1 OF 3	C4	3	B	NORMAL	FIXED	C_DIFF_PRESS	24		3	
								C_FLOW	24	FULL	3	
								C_VIB_UPGBX_AX	24			
								C_VIB_UPGBX_HOR	24			
								C_VIB_UPGBX_VER	24			
								DIFF_PRESSURE	03		3	
								FLOW	03	FULL	3	
	EMERGENCY SERVICE WATER VERTICAL LINE SHAFT PUMP											
1-VS-P-1A	11448-CBM-071D	1 OF 1	D7	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-VS-P-1B	11448-CBM-071D	1 OF 1	D6	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-VS-P-1C	11448-CBM-071D	1 OF 1	D3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-VS-P-1D	11448-FM-71D	2		3	A	RECIRC	VAR	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-VS-P-1E	11448-FM-71D	2		3	A	RECIRC	VAR	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-VS-P-1E	11448-FM-71D	2		3	A	RECIRC	VAR	VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03		1	
								VIB_UP_MTR_VERT	03		1	
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-VS-P-2A	11448-FB -041A	2 OF 2	B6	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW_TOTAL	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW_TOTAL	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											
1-VS-P-2B	11448-FB -041A	2 OF 2	B5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW_TOTAL	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW_TOTAL	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											
1-VS-P-2C	11448-FB -041A	2 OF 2	B4	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW_TOTAL	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-VS-P-2C	11448-FB -041A	2 OF 2	B4	3	A	NORMAL	VARIABLE	C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW_TOTAL	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03		1	
								VIB_UP_MTR_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											
1-VS-P-2D	11448-FB-41A	3		3	A	NORMAL	VAR	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											
1-VS-P-2E	11448-FB-41A	3		3	A	NORMAL	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03		1	
								VIB_IN_VERT	03		1	
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											

PUMP INSERVICE TEST TABLE NOTES

Note 1 - As described in Relief Request P-5, pumps 1-CC-P-1A and B are tested over a range of flows every three months. The lower end of this range is less than 20% of pump design flow. However, to minimize system perturbations, the range will not be changed to accommodate the 20% of design flow.

Note 2 - The normal charging flow path is the only flow path available for Group A tests that are performed every three months for pumps 1-CH-P-1A, B and C. Flow within 20% of pump design flow cannot be achieved with this flow path.

Note 3- As described in Relief Request P-8 a flow within 20% of pump design flow cannot be achieved with the only available test loop for containment spray pumps 1-CS-P-1A and B.

Note 4 - As described in Relief Request P-9, a flow within 20% of pump design flow cannot be achieved with the only available test loop for outside recirculation spray pumps 1-RS-P-2A and B.

Note 5 - The low head safety injection recirculation flow path is the only flow path available for Group B tests that are performed every three months for pumps 1-SI-P-1A and B. Flow within 20% of pump design flow cannot be achieved with this flow path.

3.6 PUMP TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements that are impractical for Surry Unit 1 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of the code requirements is proposed.

RELIEF REQUEST P-1

Systems: Refer to Table P-1

Pump(s): Refer to Table P-1

Group: Refer to Table P-1

Class: Refer to Table P-1

Function: Various

ISTB Code Requirements for Which Relief Is Requested

ISTB-3300, requires that reference values be determined from the results of preservice testing or from the results of the first inservice test. This request applies only to vibration testing.

Basis for Relief (ISTB-3300)

The pumps listed in Table P-1 have at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips). Small values for V_r produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5100-1, ISTB-5200-1, ISTB-5300-1 and ISTB-5300-2 as less than or equal to $2.5V_r$. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action.

For very small reference values, hydraulic noise and instrument error can be a significant portion of the reading and affect the repeatability of subsequent measurements. Also, experience gathered from the Surry preventive maintenance program has shown that changes in vibration levels in the range of 0.05 ips do not normally indicate significant degradation in pump performance.

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1 where the measured reference value is less than 0.05 ips.

When new reference values are established per ISTB-3310, ISTB-3320 or ISTB-6200(c), the measured parameters will be evaluated for each location to determine if the provisions of this relief request still apply. If the measured V_r is greater than 0.05

ips, the requirements of ISTB-3300 will be applied even if the pump is listed in Table P-1. Conversely, if the measured V_r is less than 0.05 ips, a minimum value of 0.05 ips will be used for V_r even if the pump is not currently listed in Table P-1.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Surry Predictive Maintenance Program. The Surry Predictive Maintenance Program currently employs predictive monitoring techniques such as:

vibration monitoring and analysis beyond that required by ISTB,
bearing temperature trending,
oil sampling and analysis, and
thermography analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

increased monitoring to establish rate of change,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300 provides an acceptable level of quality and safety.

<u>Alternate Testing Proposed</u>

Pumps with a measured reference value below 0.05 ips for a particular vibration measurement location shall have subsequent test results for that location compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

Table P-1

Pump Number	System	Code Class	OM Group	Description
1-CC-P-1B	Component Cooling	3	A	Component Cooling Water Pump
1-CC-P-2A	Component Cooling	3	A	Charging Pump Cooling Water Pump
1-CH-P-1B 1-CH-P-1C	Chemical and Volume Control	2	A	High Head Safety Injection/Charging Pumps
1-CH-P-2B	Chemical and Volume Control	2	A	Boric Acid Transfer Pump
1-SW-P-10A	Service Water	3	A	Charging Pump Service Water Pumps
1-VS-P-1A 1-VS-P-1B 1-VS-P-1D 1-VS-P-1E	Ventilation	3	A	Main Control Room Air Conditioning System Condenser Water Pumps
1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	Ventilation	3	A	Main Control Room Air Conditioning System Chilled Water Pumps

RELIEF REQUEST P-2

Systems: Residual Heat Removal

Pump(s): 1-RH-P-1A
1-RH-P-1B

Group: A

Class: 2

Function: The residual heat removal pumps remove decay heat from the reactor core and the reactor coolant system during plant cool down.

ISTB Code Requirements for Which Relief Is Requested

Table ISTB-3400-1, requires an inservice test be run on each Group A pump nominally every 3 months.

Basis for Relief (Table ISTB-3400-1)

The residual heat removal pumps are located inside containment and are inaccessible during normal operation. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters that prevent the valves from being opened when the RCS pressure exceeds 490 psig. Therefore, testing the residual heat removal pumps during normal operation is not practical.

Alternate Testing Proposed

These pumps will be tested every cold shutdown but not more frequently than once every three months.

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-3400-1identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-3

System : Service Water

Pump(s): 1-SW-P-1A
1-SW-P-1B
1-SW-P-1C

Group: B

Class: 3

Function: The emergency service water pumps supply the required service water to the canal to provide for minimum safeguards operation in the unlikely event of a loss of site power coincident with a design basis accident.

ISTB Code Requirements for Which Relief Is Requested

ISTB-5222 requires that "Group B tests shall be conducted with the pump operating at a specified reference point."

ISTB-5223 requires that "Comprehensive tests shall be conducted with the pump operating at a specified reference point."

Basis for Relief (ISTB-5222 and ISTB-5223)

The emergency service water pumps take suction from the James River and discharge into the intake canal. The James River near the plant is subject to a tide level variation of approximately five feet. Therefore, the total static head for the system can vary from test to test. There are no valves in the lines to throttle flow and to compensate for the change in system static head. The only way to duplicate flow and differential pressure from test to test is to perform the test at the same tide level each time. Trying to perform this test within a small enough tide level range to produce repeatable results has proven impractical. To compensate for the change in total system head, a pump reference curve will be prepared based on test results taken at different tide levels. Tests will be conducted within the tide level limits of the curve, and results will be compared to acceptance criteria based on the reference curve and the ranges given in Table ISTB-5200-1. Inlet pressure will be calculated from tide level. The guidelines set forth in Code Case OMN-9, "Use of a Pump Curve for Testing" will be followed.

Past vibration data for the subject pumps has been reviewed and it has been determined that pump vibration does not vary significantly with flow rate over the range of the test flow rates. This alternative to the requirements of ISTB-5222 and ISTB-5223 provides an acceptable level of quality and safety.

Alternate Testing Proposed

Tests will be conducted within the tide level limits of the pump reference curve, and flow will be compared to acceptance criteria based on the reference curve.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5222 and ISTB-5223 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-4

System : Main Control Room Air Conditioning

Pump(s): 1-VS-P-2A	1-VS-P-2D
1-VS-P-2B	1-VS-P-2E
1-VS-P-2C	

Group: A

Class: 3

Function: The main control room air conditioning system chiller water pumps circulated chilled water to the main control room and switch gear room air handling units.

ISTB Code Requirements for Which Relief Is Requested

ISTB-5121 requires that "Group A tests shall be conducted with the pump operating at a specified reference point."

ISTB-5123 requires that "Comprehensive tests shall be conducted with the pump operating at a specified reference point."

Basis for Relief (ISTB-5121 and ISTB-5123)

The chilled water circulating pumps for the main control room air conditioning system service two trains each with of four air handling units connected in a parallel configuration. Total flow for each pump is determined by summing the recorded flows from flow instruments placed downstream of the four air handling units in one of the trains. Throttling a gate valve near each air-handling unit, which has proven to be a crude flow control method, controls test flow. Having to throttle to a specific reference flow using the sum of flows from four instruments with a gate valve that is not suited for fine flow control is not very practical.

Alternate Testing Proposed

The chilled water circulating pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-9, "Use of a Pump Curve for Testing" will be followed. This alternative to the requirements of ISTB-5121 and ISTB-5123 provides an acceptable level of quality and safety.

RELIEF REQUEST P-4

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5121 and ISTB-5123 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-5

System : Component Cooling

Pump(s): 1-CC-P-1A
1-CC-P-1B

Group: A

Class: 3

Function: The component cooling water pumps supply cooling water to transfer heat from heat exchangers containing reactor coolant or other radioactive fluids.

ISTB Code Requirements for Which Relief Is Requested

ISTB-5121 requires that "Group A tests shall be conducted with the pump operating at a specified reference point."

ISTB-5123 requires that "Comprehensive tests shall be conducted with the pump operating at a specified reference point."

Basis for Relief (ISTB-5121 and ISTB-5123)

During testing of the component cooling water pumps, flow is adjusted to the reference flow rate using an 18-inch butterfly valve. The butterfly valve is a crude throttling device and does not provide the fine tuning that is required to duplicate the reference flow rate from test to test. Consequently, throttling to the same reference flow rate during each test is not practical.

Alternate Testing Proposed

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-9, "Use of a Pump Curve for Testing" will be followed. This alternative to the requirements of ISTB-5121 and ISTB-5123 provides an acceptable level of quality and safety.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5121 and ISTB-5123 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-6

System : Chemical and Volume Control

Pump(s): 1-CH-P-2A
1-CH-P-2B

Group: A

Class: 2

Function: The boric acid transfer pumps supply boric acid to the suction of the charging pumps for emergency boration.

ISTB Code Requirements for Which Relief Is Requested

Table ISTB-3500-1 requires that Group A test pressure instrument accuracy shall be within ± 2%.

ISTB-3510(b)(1) requires that the full-scale range of each analog instrument shall be not greater than three times the reference value.

Basis for Relief (Table ISTB-3500-1)

Calibrating the inlet pressure instruments for the boric acid transfer pumps to an accuracy within ± 2% has proven difficult and may be impractical in the future with the current instruments. Calibrating the inlet pressure instruments to an accuracy within ± 3% would be practical.

Basis for Relief (ISTB-3510(b)(1))

The inlet pressure gauges have a full scale range of 0 to 15 psig. These instruments were sized by evaluating the static pressures present at the suction side of the pumps and applying the three times rule of ISTB-3510(b)(1). The static pressures range from 6 to 7 psig.

When the pumps are started, the pressure at the suction side of the pumps drops to approximately 2 psig; therefore, the inlet pressure gauges do not meet the three times rule for dynamic inlet pressure.

Using a lower range pressure gauge (i.e. 0 to 5 psig) would meet the three times rule for dynamic inlet pressure; however, the lower range gauge would be repeatedly exposed to an over range condition (static pressures in excess of 5 psig) which would damage the instruments.

Using a lower range temporary gauge on a quarterly basis presents a hardship because the process fluid contains boric acid and is contaminated. If contaminated, the temporary instruments would probably become waste material. However, with the current 0 to 15 psig inlet pressure gauges calibrated to $\pm$ 3%, a differential pressure can be determined that exceeds the accuracy requirements for differential pressure.

Each boric acid transfer pump discharge pressure gauge (0 to 150 psig range) has an instrument loop accuracy of 1.59%. Computing the maximum error for differential pressure using the current instrument configuration and an inlet pressure gauge accuracy of $\pm$ 3%, yields an error of 2.85 psid.

Computing the Code allowed error for differential pressure for an inlet pressure gauge with a 2% accuracy and a 0 to 5 psig range and a discharge pressure instrument with a 2% accuracy and a 0 to 150 psig range yields an error of 3.1 psid. With the current instrument configuration, the loop accuracy of each discharge pressure instrument could be as high as 1.75%, which equates to a 3.075 psid error, and still be within the Code allowed error of 3.1 psid for differential pressure. Therefore, for purposes of trending pump degradation using differential pressure and flow, the current instrument is adequate as long as the discharge pressure instrument loop accuracies remain at or below 1.75%.

Alternate Testing Proposed

The inlet pressure gauges with a full scale range of 0 to 15 psig and calibrated to an accuracy within $\pm$ 3%, will be used to measure dynamic inlet pressures. Also, the loop accuracies for the discharge pressure gauges will be maintained at or below an accuracy of 1.75% to ensure that the differential pressure error is below the differential pressure error allowed by the Code.

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-3500-1 and ISTB-3510(b)(1) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-7

System : Component Cooling Water

Pump(s): 1-CC-P-2A
1-CC-P-2B

Group: A

Class: 3

Function: The charging pump cooling water pumps supply cooling water to transfer heat from the charging pump mechanical seals.

ISTB Code Requirements for Which Relief Is Requested

ISTB-3510(b)(1) requires that the full-scale range of each analog instrument shall be not greater than three times the reference value.

Basis for Relief (ISTB-3510(b)(1))

Recently installed inlet pressure gauges have a full-scale range of 0 to 3.5 psig. Readings from these inlet pressure gauges over the past year indicate that the dynamic pressures fall within the bottom third of full scale. However, the difference in the error between the 0 to 3.5 psig gauges and gauges that would meet the three times full-scale rule are so small that the 0 to 3.5 psig gauges can be considered to be equivalent in terms of accuracy for determining differential pressure.

For example, inlet pressures as low as 0.8 psig have been recorded for pump 1-CC-P-2B. A gauge that meets the three times full-scale rule would have a full scale of 2.4 psig or less. A 2% accuracy for the 2.4 psig gauge translates to an error of 0.05 psig. A 2% accuracy for the 3.5 psig gauge translates to an error of 0.07 psig. The difference in error of 0.02 psig is insignificant when determining the differential pressures for these pumps which range between 50 and 60 psig. Therefore, the two gauges can be considered to be equivalent in terms of accuracy for determining differential pressure.

Alternate Testing Proposed

Inlet pressure will be measured with gauges that have a full-scale of 0 to 3.5 psig.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3510(b)(1) identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-8

Systems: Containment Spray

Pump(s): 1-CS-P-1A
1-CS-P-1B

Group: B

Class: 2

Function: The containment spray pumps provide a cooled, chemically treated, borated spray to reduce containment pressure following a loss of coolant accident.

<u>ISTB Code Requirements for Which Relief Is Requested</u>

ISTB-3300(e)(1) (Reference Values) requires that reference values shall be established within ±20% of pump design flow rate for comprehensive tests.

ISTB-5110(a) (Preservice Testing) requires that, "In systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow."

<u>Basis for Relief (ISTB-3300(e)(1))</u>

The test loop for the containment spray pumps consists of an 8" pump discharge line feeding into a 4" recirculation line which connects to a 6" header that discharges to the reactor water storage tank (RWST). Refer to Figure P-8.1. The containment spray pumps take suction from the RWST. With this test loop, pump design flow cannot be established. Also, the discharge piping was not designed to be temporarily reconfigured so that pump design flow could be achieved.

During the construction period, the containment spray headers were fitted with blind flanges that allowed the connection of temporary drain lines for initial testing of the subsystem. After the subsystem was completely installed, temporary connections were made to the blind flanges on the spray headers, and pipe plugs were placed in the spray nozzle sockets. The containment spray pumps were started and operated over a range of flows, circulating water through the spray header supply lines to the spray headers and out the temporary drain connections. This provided a full-system capability test to ensure that the system met the flow requirements. It also provided for a flush of the system to remove any particulate matter that could plug the spray nozzles at a future time. At the completion of this test, the temporary drain connections were removed, the blind flanges replaced, the pipe plugs removed, the nozzle pipe nipple inspected, and the spray nozzles installed.

Re-establishing this test loop for the purpose of periodic testing would require plant modifications and is not practicable. The spray headers are inaccessible without a significant amount of scaffolding. Even if the nozzles were accessible, the plugging of 234 spray nozzles, running the flow test and returning the system to its operable configuration present substantial challenges in terms of complexity of the temporary modifications, labor intensive nature of the modifications, and controls and post modification testing needed to ensure that the system is returned to the original configuration.

To be within 20% of the pump design flow of 3200 gpm requires a reference flow of 2560 gpm. For the reasons stated above, reference flows are typically established near 1600 gpm, which is not within 20% of design flow. As an alternative to testing within 20% of the design flow, the reference values will be established to within approximately 50% of the design flow or approximately 1600 gpm. It is our understanding that testing at design flow is important for pumps with characteristic head-flow curves that are flat or gently sloping in the low flow region (little change in developed head with increasing flow). In the low flow region, increasing internal flows, usually due to wear, are difficult if not impossible to detect. Pumps with the "flat" curves at low flows should be tested at near design conditions to determine if increasing internal recirculation flows have degraded pump performance to the point where design requirements cannot be met. This situation does not apply to the containment spray pumps if they are tested to within 50% of design flow. Testing at the reference flows will detect pump degradation because the pump curve is well sloped at the point of testing. Figure P-8.2 shows the nominal vendor pump curve for 1-CS-P-1A along with the reference test point, and Figure P-8.3 shows the same information for 1-CS-P-1B.

In addition to the testing described above, the outside recirculation pumps are included in the Surry Predictive Maintenance Program. For the containment spray pumps, this program employs predictive monitoring techniques, such as vibration monitoring and analysis beyond that required by ISTB, and oil sampling and analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

monitor additional parameters,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

Basis for Relief (ISTB-5110(a))

With the restrictions described above, the highest flow that can be measured while maintaining stable test conditions is approximately 50% of design flow. Measuring more than one point on the pump curve is limited to flow rates less than the reference flows of approximately 1600 gpm. Throttling the flow down to 20% of design flow will provide one more point on the curve.

Near 1600 gpm, the head curve is not flat, but well sloped as shown in Figure P-8.2 and Figure P-8.3 for pumps 1-CS-P-1A and 1-CS-P-1B, respectively. Therefore, as performance degrades due to internal recirculation caused by increasing internal pump clearances, the differential pressure will measurably decrease for a given reference flow rate. As discussed above, testing the containment spray pumps over the full range of the pump curve and measuring at least five points along the curve is impractical.

As an alternative to measuring at least five points for the preservice test, two points will be measured at approximately 20% and 50% of design flow. The proposed alternative to ISTB-5110(a) provides an acceptable level of quality and safety.

Alternate Testing Proposed

Comprehensive test reference flows will be established to within approximately 50% of pump design flow. Preservice tests will be conducted using two points on the pump curve at approximately 20% and 50% of pump design flow.

The containment spray pumps will be subject to additional testing, trending and diagnostic analysis of the Surry Predictive Maintenance Program.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) and ISTB-5110(a) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

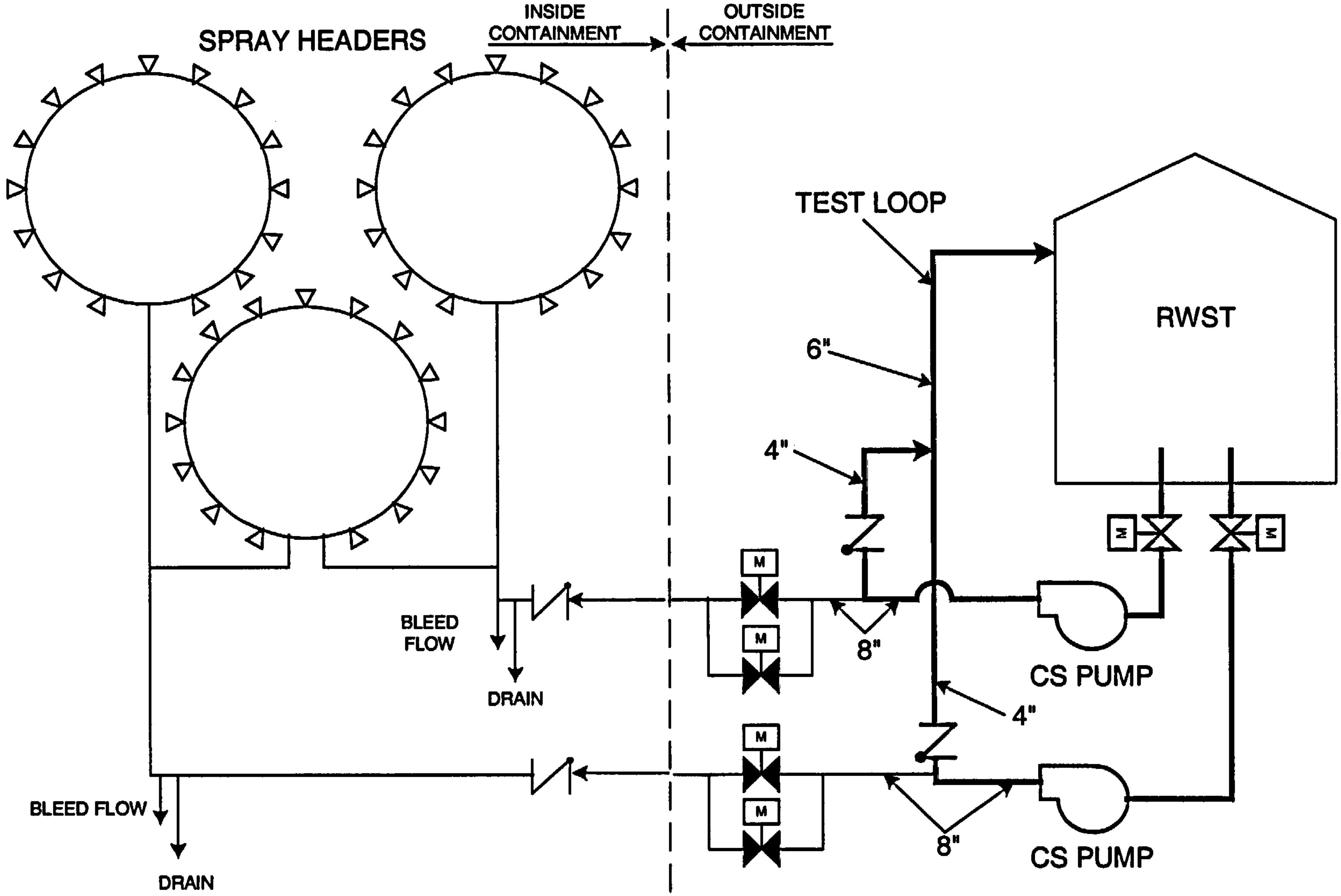

SPRAY HEADERS
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
TEST LOOP
RWST
6"
4"
M
BLEED FLOW
DRAIN
8"
CS PUMP
4"
M
BLEED FLOW
DRAIN
8"
CS PUMP

Figure P-8.1

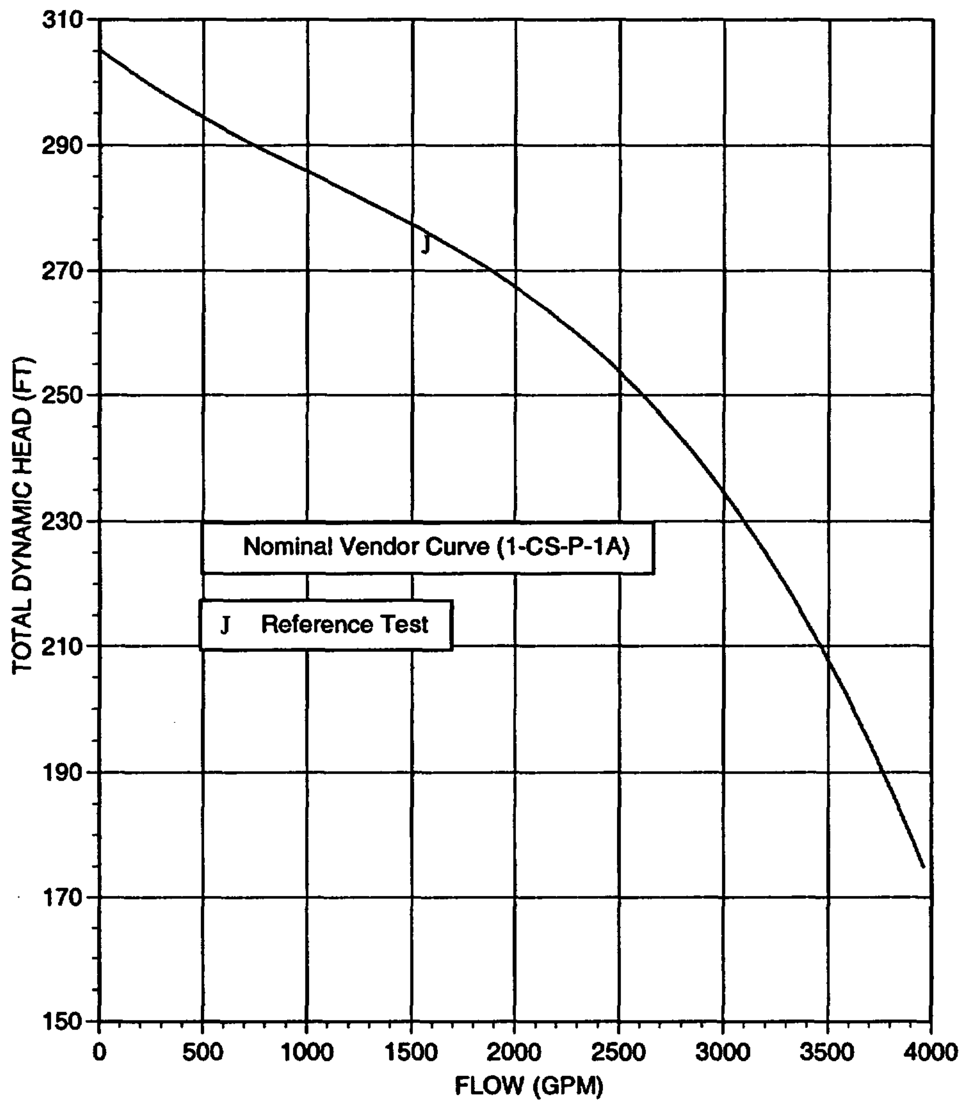

310
290
270
250
230
210
190
170
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
FLOW (GPM)
J
Nominal Vendor Curve (1-CS-P-1A)
J Reference Test

Figure P-8.2

Relief Request P-8 (Cont.)

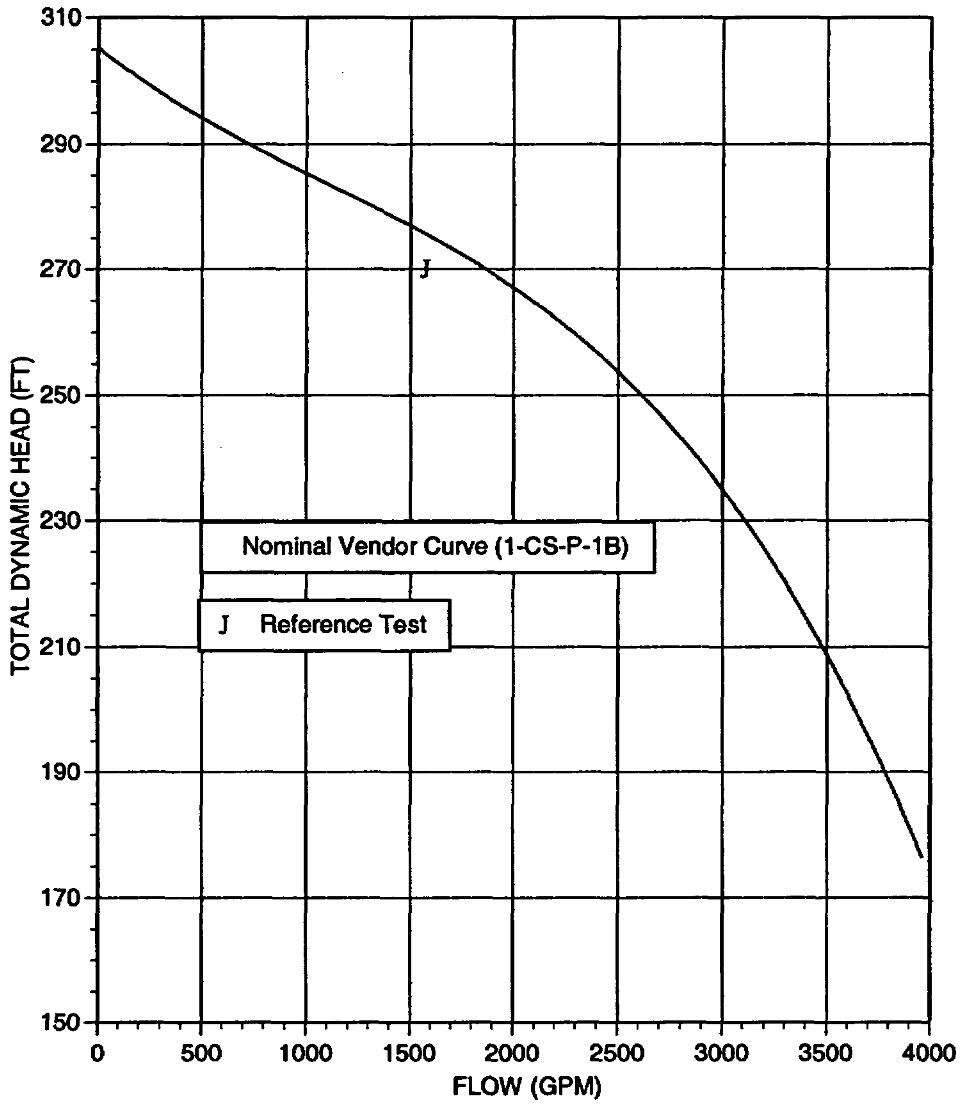


Figure P-8.3

RELIEF REQUEST P-9

Systems: Recirculation Spray

Pump(s): 1-RS-P-2A
1-RS-P-2B

Group: B

Class: 2

Function: The outside recirculation spray pumps supply borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident.

<u>ISTB Code Requirements for Which Relief Is Requested</u>

ISTB-3300(e)(1) (Reference Values) requires that reference values shall be established within $\pm$20% of pump design flow rate for comprehensive tests.

ISTB-5210(a) (Preservice Testing) requires that, "In systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow."

<u>Basis for Relief (ISTB-3300(e)(1))</u>

The outside recirculation pumps are long shaft pumps with the shaft and impeller enclosed in a 52 foot casing. The pump impellers are located near the bottom of the casing. The test loop for the outside recirculation pumps consists of a 10" pump discharge line feeding into a 4" recirculation line which feeds back to the pump casing. Refer to Figure P-9.1. With this test loop, pump design flow cannot be established. Reference flows are typically established with this test loop in the range of 1100 gpm, whereas the pump required flow is 3000 gpm. The low reference flows result from restrictions due to the small 4" recirculation line and the limited volume of water in the test loop. The limited water volume results in a rapid temperature rise in the test loop due to heat loads added by the running pump. This temperature rise affects repeatability of the measured hydraulic parameters. Therefore, care must be taken to ensure that the pump run time is limited and that the flow rate is maintained within an optimal range.

The discharge piping was not designed to be temporarily reconfigured so that pump design flow could be achieved. Pre-operational testing consisted of a shutoff head verification test and a flow test through the existing 4-inch test loop. Flow was not established to the spray headers.

To be within 20% of the pump design flow of 3000 gpm requires a reference flow of 2400 gpm. For the reasons stated above, reference flows are typically established in the range of 1100 gpm, which is not within 20% of design flow. As an alternative to testing within 20% of the design flow, the reference values will be established to within approximately 64% of design flow or approximately 1100 gpm. It is our understanding that testing at design flow is important for pumps with characteristic head-flow curves that are flat or gently sloping in the low flow region (little change in developed head with increasing flow). In the low flow region, increasing internal flows, usually due to wear, are difficult if not impossible to detect. Pumps with the "flat" curves at low flows should be tested at near design conditions to determine if increasing internal recirculation flows have degraded pump performance to the point where design requirements cannot be met. This situation does not apply to the outside recirculation pumps if they are tested to within 64% of design flow. Testing at the reference flows will detect pump degradation because the pump curve is well sloped at the point of testing. Figure P-9.2 shows nominal vendor pump curve for 1-RS-P-2A along with the reference test point, and Figure P-9.3 shows the same information for 1-RS-P-2B.

In addition to the testing described above, the outside recirculation pumps are included in the Surry Predictive Maintenance Program. For the outside recirculation spray pumps, this program employs predictive monitoring techniques, such as vibration monitoring and analysis beyond that required by ISTB, and oil sampling and analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

monitor additional parameters,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

Basis for Relief (ISTB-5210(a))

With the restrictions described above, the highest flow that can be measured while maintaining stable test conditions is approximately 36% (within 64%) of design flow. Measuring more than one point on the pump curve is limited to flow rates less than the 1100 gpm range. Throttling the flow down to 20% of design flow to measure another point on the pump curve may cause flashing across the throttle valve which would cause hydraulic instabilities given the limited test volume, and provide questionable test results. In the 1100 gpm range of the head curve for these pumps, the head curve is not flat, but well sloped, as shown in Figures P-9.2 and P-9.3. Therefore, as performance degrades due to internal recirculation caused by increasing internal pump clearances, the differential pressure will measurably decrease for a given reference flow rate. As discussed above, testing the outside recirculation spray pumps over the full range of the pump curve and measuring at least five points along the curve is impractical.

As an alternative to measuring at least five points for the preservice test, one point will be measured to within approximately 64% of design flow. The proposed alternative to ISTB-5210(a) provides an acceptable level of quality and safety.

Alternate Testing Proposed

Comprehensive test reference flows will be established to within approximately 64% of pump design flow. Preservice tests will be conducted using one point on the pump curve to within approximately 64% of pump design flow.

The outside recirculation spray pumps will be subject to additional testing, trending and diagnostic analysis of the Surry Predictive Maintenance Program.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) and ISTB-5210(a) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

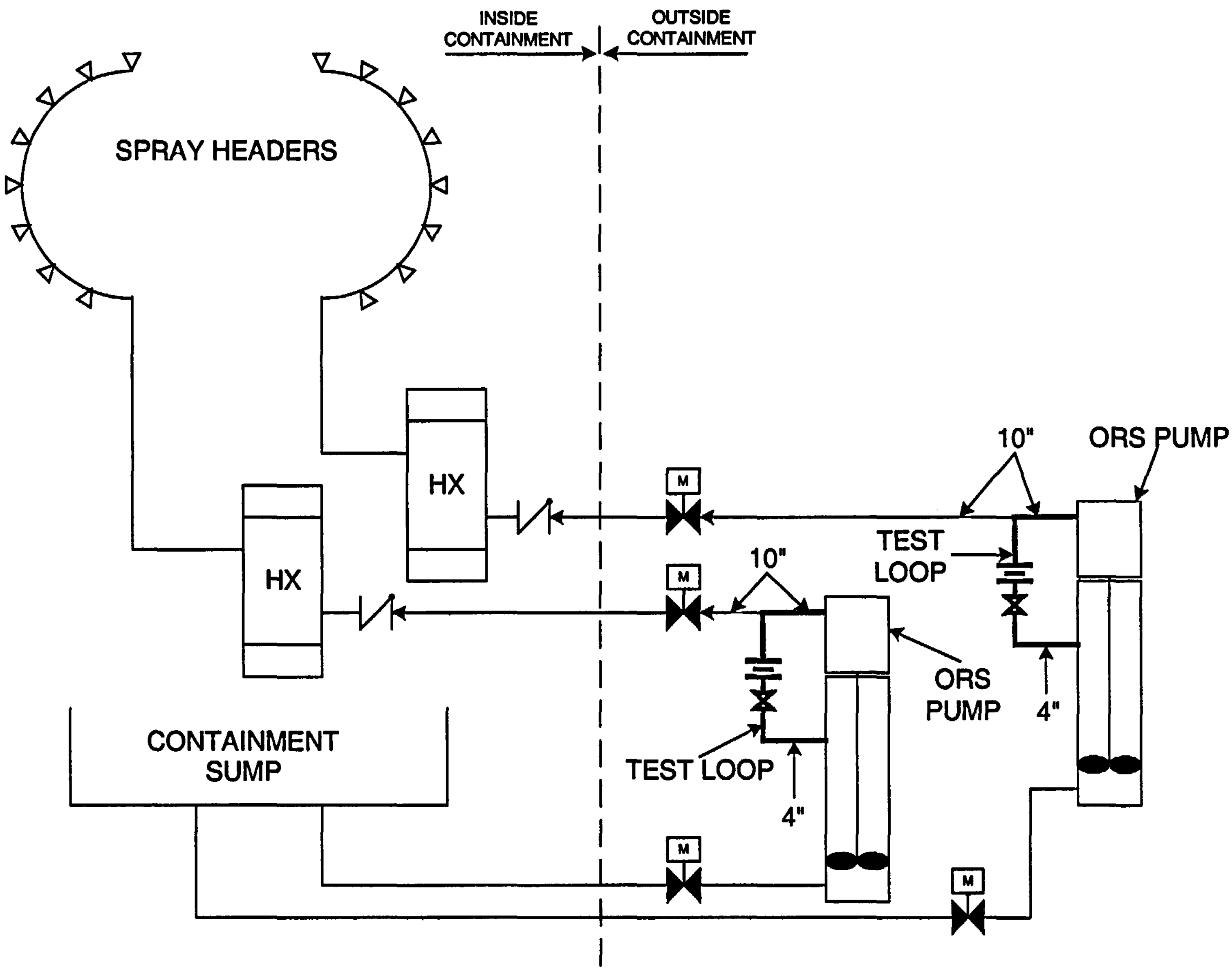

INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
SPRAY HEADERS
HX
HX
M
M
M
M
10"
ORS PUMP
TEST LOOP
10"
ORS PUMP
4"
CONTAINMENT SUMP
TEST LOOP
4"

Figure P-9.1

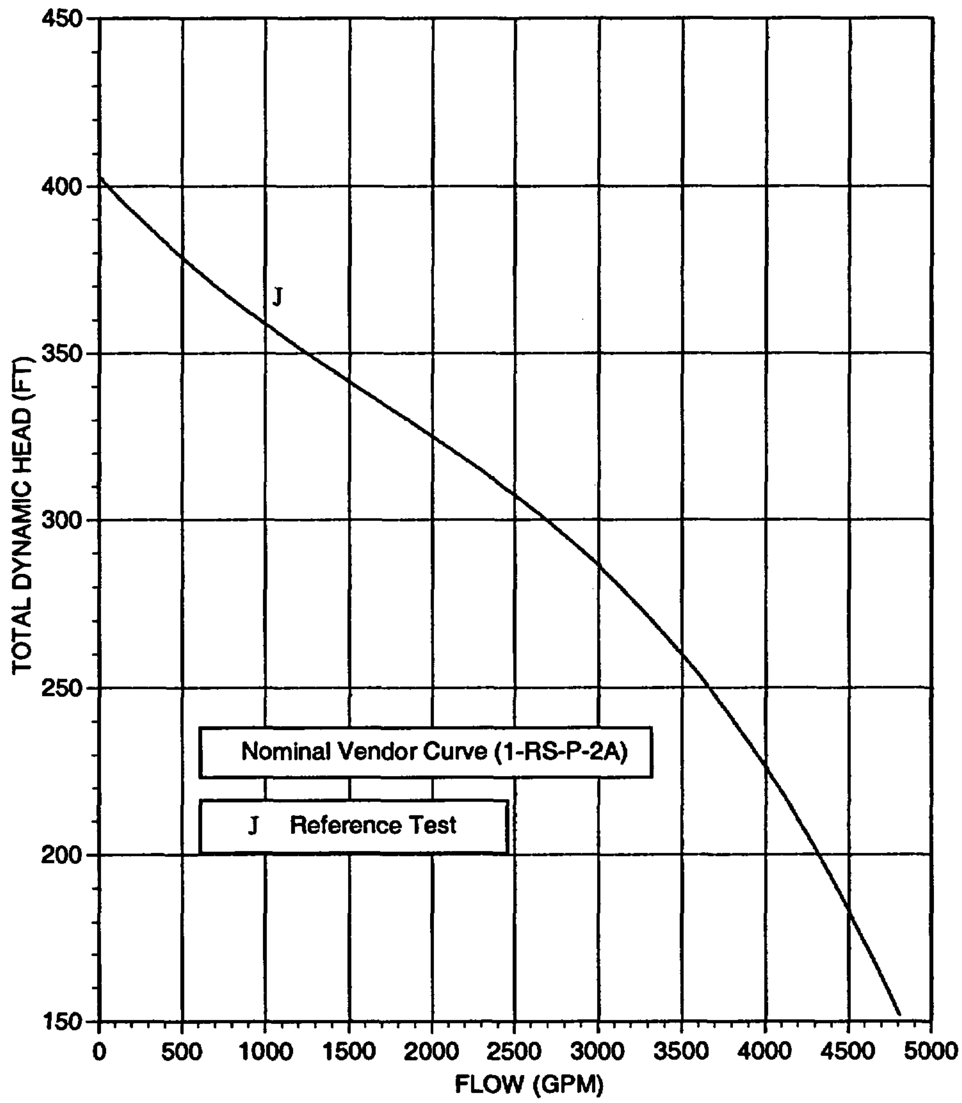

450
400
350
300
250
200
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
FLOW (GPM)
J
Nominal Vendor Curve (1-RS-P-2A)
J Reference Test

Figure P-9.2

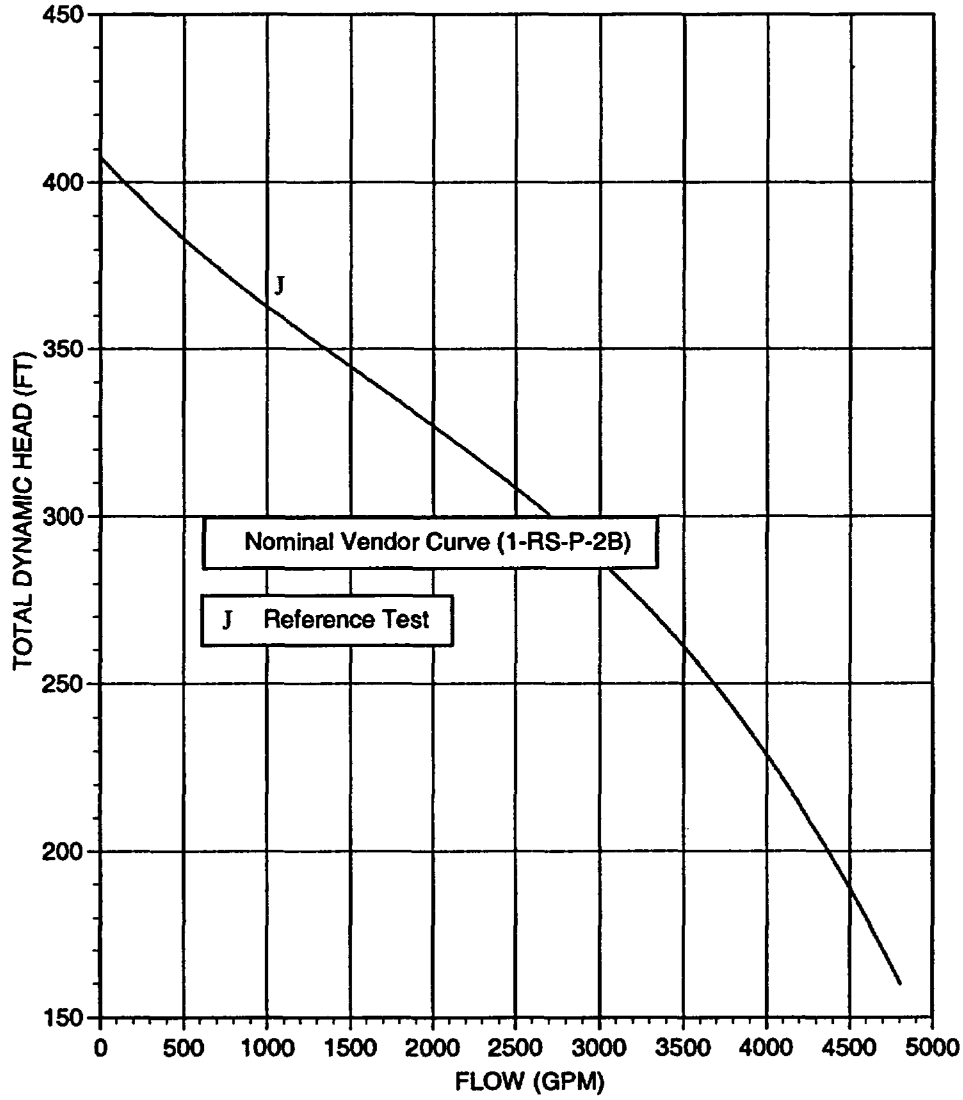

450
400
350
300
250
200
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
FLOW (GPM)
J
Nominal Vendor Curve (1-RS-P-2B)
J Reference Test

Figure P-9.3

3.7 ALTERNATIVE TESTING FOR NON-CODE PUMPS

According to the minutes of public meeting on Generic Letter 89-04, "Paragraph (g) of 10 CFR 50.55a requires the use of Section XI of the ASME Code for inservice testing of components covered by the Code. Paragraph (g) has been replaced by Paragraph (f) in the currently approved 10 CFR 50.55a. For other components important to safety, the licensee also has the burden of demonstrating their continued operability." The minutes go on to state that, "The Code-required IST program is a reasonable vehicle to provide a periodic demonstration of the operability of pumps and valves not covered by the Code. If non-Code components are included in the ASME Code IST program (or some other licensee-developed inservice testing program) and certain Code provisions cannot be met, the Commission regulations (10 CFR 50.55a) do not require a 'request for relief' to be submitted to the staff. Nevertheless, documentation that provides assurance of the continued operability of the non-Code components through the performed tests should be available at the plant site." Non-Code components are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

Surry Power Station has elected to include certain non-Code components in the ASME IST program. Where the Code provisions cannot be met for non-Code components, alternative testing is performed that is adequate to ensure continued operability. The alternate testing is described in this section. There may be other deviations from Code provisions that are not described in this section. For these cases, documentation is available at the plant site.

As indicated in the minutes of public meeting on Generic Letter 89-04, a 'request for relief' need not be submitted for non-Code components. Therefore, the alternative tests described in this section are not 'requests for relief' but are provided for information.

System : Fuel Oil

Pump(s): 1-EE-P-1A
1-EE-P-1C
1-EE-P-1D
1-EE-P-1F

Group: B

Class: NC

Function: Emergency diesel generator fuel oil transfer pumps supply fuel oil to the emergency diesel generator fuel oil day tank which directly supplies the emergency diesel generator.

ISTB Code Requirements Which Will Not Be Met

ISTB-3300 requires that reference values be determined from the results of preservice testing or from the results of the first inservice test.

ISTB-3510(f) requires that the frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 HZ.

ISTB-5300(a)(1) requires that for comprehensive pump tests each pump shall be run at least 2 minutes before the test quantities are measured. This requirement does not apply to the quarterly Group B tests.

Basis For Alternate Testing For ISTB-3300

The pumps listed above have at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips). Small values for V_r produce small acceptable ranges for pump operation. The acceptable ranges are defined in Table ISTB-5300-1 as less than or equal to $2.5V_r$. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action.

For very small reference values, hydraulic noise and instrument error can be a significant portion of the reading and affect the repeatability of subsequent measurements. Also, experience gathered from the Surry preventive maintenance program has shown that changes in vibration levels in the range of 0.05 ips do not normally indicate significant degradation in pump performance.

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1 where the measured reference value is less than 0.05 ips.

When new reference values are established per ISTB-3310, ISTB-3320 or ISTB-6200(c), the measured parameters will be evaluated for each location to determine if the provisions of this non-Code alternative test description still apply. If the measured V_r is greater than 0.05 ips, the requirements of ISTB-3300 will be applied. Conversely, if the measured V_r is less than 0.05 ips, a minimum value of 0.05 ips will be used for V_r even if the previous reference value was above 0.05 ips.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Surry Predictive Maintenance Program. The main attributes of the Surry Predictive Maintenance Program are described in Relief Request P-1.

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300 provides an acceptable level of quality and safety.

Basis For Alternate Testing For ISTB-3510(f)

The minimum pump shaft rotational speed for these pumps is 690 rpm. To meet the one-third shaft speed requirement, the low end of the frequency response range would have to be 3.8 Hz. The transducers used for testing the diesel fuel oil transfer pumps have a low end frequency response of 10 Hz. These transducers are capable of detecting vibrations at frequencies of at least one times the rotational speed of the pump, which is adequate for detecting degradation in positive displacement pumps.

Basis For Alternate Testing For ISTB-5300(a)(1)

The pump operating time is limited due to operational restraints. While the diesels are running, these pumps start automatically when the fuel oil level in the day tank reaches the low level switch, and stop when the level reaches the high level switch. The pump run time can vary depending upon the diesel load and the resulting fuel consumption rate. If the pumps are allowed to run for two minutes prior to measuring the test quantities and the fuel consumption rate is low, not enough time is available to gather all of the required ASME OM test data.

Alternate Testing

Pumps with a measured reference value below 0.05 ips for a particular vibration measurement location shall have subsequent test results for that location compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

The transducers used for testing the diesel fuel oil transfer pumps have a low end frequency response of 10 Hz versus the 3.8 Hz required by the Code for a pump running at 690 rpm.

The measurement of ASME OM quantities will begin when the pump automatically starts on a low tank level signal.

Note: The diesel oil transfer pumps are positive displacement pumps. According to Table ISTB-3000-1, discharge pressure, flow and vibration need to be measured for positive displacement pumps. Differential pressure does not have to be measured.

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 1 Technical Specification 4.0.5 describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 valves. The Surry Unit 1 Inservice Testing (IST) Program for Valves has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTC and Technical Specifications.

The scope of the program includes ASME Class 1, 2 and 3, and certain non-Code class valves that are required to perform a specific function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition or mitigating the consequences of an accident.

ISTC defines the rules and requirements of inservice testing of Code Class 1, 2, and 3 valves and states that each valve to be tested by the rules of this subsection shall be identified by the owner and listed in the plant records.

The purpose of the IST Program Plan is to identify the valves that are considered by Virginia Electric and Power (Dominion) Company as having a safety function and are therefore subject to the testing requirements of ISTC. The intent of the Code is to assess operational readiness and detect potentially adverse changes in the mechanical condition of these valves. The relief requests for the IST Program Plan identify Code requirements considered to be impractical, provide technical basis for the request and propose alternate testing when warranted. The relief requests are presented in Section 4.5.

Surry Unit 1 is committed to meeting the leak rate testing requirements of:

1) 10CFR50, Appendix J, Option B for containment isolation valves and

2) ISTC for other valves for which seat leakage is limited to a specific maximum amount (i.e. pressure isolation valves) unless relief is specifically requested from ISTC requirements.

4.2 PROGRAM IMPLEMENTATION

The Valve Inservice Test Program is executed as part of the normal plant surveillance routine. Three types of tests are conducted as part of the Valve Test Program:

1) Valve Exercise Tests,
2) Valve Leakage Tests and
3) Safety Valve Tests

The Exercise Tests verify that:

1) the valve strokes properly,
2) the valve responds to control commands,
3) the valve stroke time is within specific limits and
4) remote position indication accurately reflects the observed valve position. Remote valve position indication will be verified every two years.

Observing the valve operation upon loss of actuating power tests fail safe valves. In most cases, this can be accomplished using normal control circuits.

Those valves that are scheduled to be exercised during cold shutdown are subject to the requirements of ISTC-3521(g) which states that:

> "valve exercising during cold shutdown shall commence within 48 hr of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. For extended outages, testing need not be commenced in 48 hr provided all valves required to be tested during cold shutdown will be tested before or as part of plant startup. However, it is not the intent of this Subsection to keep the plant in cold shutdown to complete cold shutdown testing;"

Check valves which are scheduled to be exercised during cold shutdown are subject to the requirements of ISTC-3522(e)which is similar to ISTC-3521(g). Relief and Safety valves are required to be tested to the requirements of ISTC, Appendix I.

Certain valves cannot be full stroke exercised during normal operation following maintenance. These valves are described in the cold shutdown justifications (refer to Section 4.6) and reactor refueling justifications (refer to Section 4.7). If maintenance cannot be deferred to a shutdown condition, then an engineering evaluation must be performed prior to the maintenance to determine the effect of the maintenance on valve performance. If the evaluation shows that performance will not be affected, then no post maintenance testing is required. A partial stroke test will be performed if possible.

To test check valves to the full open position, the maximum required accident condition flow must be measured through the valve. In certain cases, this flow cannot be practically established or verified. Per ISTC-

5221(c), disassembly and examination of the check valves on a sampling basis is an acceptable alternative testing method.

4.3 PROGRAM ADMINISTRATION

The engineering staff at Surry is responsible for the administration of the IST Program for Valves. The operations staff is responsible for performing the periodic tests as required by this program. The IST Program for Valves is implemented by station periodic test procedures.

4.4 VALVE INSERVICE TEST TABLE

The Valve Inservice Test Table describes how the Valve Program meets ISTC requirements. To aid the reader in the interpretation of the table, brief explanations of the table headings and abbreviations are provided.

For non-Code valves, a request for relief is not necessary when provisions of the Code will not be met. Section 4.8 contains a discussion of the testing requirements for non-Code valves and descriptions of alternative testing in cases where the provisions of the Code will not be met.

1) Valve Number - Each valve in the plant has a unique "mark" number that identifies the system to which the equipment belongs and type of equipment.

2) Drawing and Sheet Number, Coordinate - The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.

3) Valve Type - A brief description of the actuator and valve type.

   The following abbreviations are used to describe actuator types. Valves may be actuated in more than one way.

   MO - Motor Operated
   AO - Pneumatic (Air Operated)
   MAN - Manually Operated
   SO - Electronic solenoid Operated Valves

4) Size - Nominal pipe diameter to which valve connects is given in inches.

5) Code Class - ASME Code Class of each valve as per 10 CFR 50.55a and Regulatory Guide 1.26.

NOTE: NC is for non-Code valves. These valves are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

6) Category - Categories are defined by ISTC-1300. Each valve has specific testing requirements that are determined by the category to which it belongs. Valves marked with an "E" are passive valves.

7) Isolation Valve Type - Valves that are assigned a maximum leakage. The following abbreviations are used to describe the main isolation valve types:

CIV - Containment Isolation Valve subject to Appendix J, Option B leakage testing as described in Technical Specification Section 4.4.B.

PIV - Pressure Isolation Valve that protects low pressure safety related piping from RCS pressure. Technical Specification Section 3.1.C specifies the pressure isolation valves that are tested in accordance with this program.

8) Test Required - Testing requirements identified for the valves are identified here.

ST - Stroke times shall be measured per ISTC-5100 or as modified by a specific relief request.

EV - Exercise valve for operability at least once every 3 months per ISTC-5100 or as modified by a specific cold shutdown or reactor refueling justification, which is allowed by ISTC-3521.

LT - Leak test shall be performed per ISTC-3600 or as modified by specific relief request.

CV - Check valves shall be exercised at least once every 3 months per ISTC-3510 or as modified by a specific cold shutdown or reactor refueling justification, which is allowed by ISTC-3522.

VP - Valve position indication shall be verified per ISTC-3700 or as modified by a specific relief request.

SP - Set points of safety and relief valves shall be tested per ISTC, Appendix I or as modified by a specific relief request. Class 1 power actuated relief valves are tested to the requirements of ISTC, Appendix I, I-7320.

FS - Valves with fail-safe actuators shall be tested by observing the operation of the valves upon loss of the actuator power at least once every 3 months per ISTC-3560 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by ISTC-3521.

9) Test Position - The following abbreviations are used to describe normal valve positions to which the valves are tested (including the valve safety position):

O - Open
C - Close
OC - Open and Close
P - Partially Open

10) Test Frequency - The following abbreviations are used to describe the test frequency:

03 - Nominally every three months

24 - Every 24 months

60 - Every 60 months

120 - Every 120 months

CS - Every cold shutdown but not more often then every three months

RR - Every reactor refueling outage

OPB - Per the test frequency determined by the Appendix J, Option B program for leak testing containment isolation valves

11) Relief Request Reference

12) Cold Shutdown Justification Reference

13) Reactor Refueling Justification Reference

14) Non-Code Alternative Test Reference

15) Function - A brief description of the function of the valve.

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-BD-TV-100A	11448-CBM-124A	1 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"A" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
1-BD-TV-100B	11448-CBM-124A	1 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"A" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-BD-TV-100C	11448-CBM-124A	2 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"B" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
1-BD-TV-100D	11448-CBM-124A	2 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"B" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-BD-TV-100E	11448-CBM-124A	3 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"C" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
1-BD-TV-100F	11448-CBM-124A	3 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-BD-TV-100F	11448-CBM-124A	3 OF 4	C-6	AO GATE	3	2	B		VP	OC	24				
	"C" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-0001	11448-CBM-072A	2 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "A" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
1-CC-0058	11448-CBM-072A	3 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "B" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
1-CC-0059	11448-CBM-072A	4 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "C" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
1-CC-0176	11448-CBM-072A	1 OF 7	F-7	CHECK VALVE	18	3	C		CV	C	RR			9	
										O	RR			9	
	CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
1-CC-0177	11448-CBM-072A	1 OF 7	F-7	CHECK VALVE	18	3	C		CV	C	RR			9	
										O	RR			9	
	CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
1-CC-0181	11448-CBM-072A	1 OF 7	A-6	MANUAL BFLY	18	3	B		EV	C	24				
										O	24				
	CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
1-CC-0185	11448-CBM-072A	1 OF 7	A-4	MANUAL BFLY	18	3	B		EV	C	24				
										O	24				
	CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
1-CC-0224	11448-CBM-072B	2 OF 3	D-2	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	
	CC SUPPLY TO "C" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-CC-0233	11448-CBM-072B	2 OF 3	D-6	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CC SUPPLY TO "B" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-CC-0242	11448-CBM-072B	2 OF 3	D-8	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	
	CC SUPPLY TO "A" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-CC-0557	11448-CBM-072D	1 OF 5	D-5	CHECK VALVE	18	3	C		CV	C	03				
										O	03				
	"A" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE														
1-CC-0563	11448-CBM-072D	1 OF 5	C-5	CHECK VALVE	18	3	C		CV	C	03				
										O	03				
	"B" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE														
1-CC-0752	11448-CBM-071B	2 OF 2	C-3	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE														
1-CC-0764	11448-CBM-071B	2 OF 2	C-7	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE														
1-CC-0805	11448-CBM-072C	4 OF 4	C-5	CHECK VALVE	1	3	C		CV	C	18	6			
										O	RR			21	
	CHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE														
1-CC-1105	11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
1-CC-1106	11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-1107	11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
1-CC-1188	11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
1-CC-1189	11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
1-CC-1190	11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
1-CC-LCV-101	11448-CBM-071B	2 OF 2	D-5	AO GATE	1	3	B		EV	C	CS		16		
										O	CS		16		
									FS	C	CS		16		
									ST	C	NA	1			
										O	NA	1			
	CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE														
1-CC-RV-112A	11448-CBM-072B	2 OF 3	C-7	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-112B	11448-CBM-072B	2 OF 3	C-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-112C	11448-CBM-072B	2 OF 3	C-4	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-113	11448-CBM-072C	3 OF 4	D-4	RELIEF VALVE	0.75	3	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	HYDROGEN RECOMBINER AFTER COOLER RELIEF VALVE														
1-CC-RV-116A	11448-CBM-072A	2 OF 7	C-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
1-CC-RV-116B	11448-CBM-072A	3 OF 7	C-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
1-CC-RV-116C	11448-CBM-072A	4 OF 7	C-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
1-CC-RV-119A	11448-CBM-072A	1 OF 7	E-3	RELIEF VALVE	1.5	3	C		SP	O	120				
	"A" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
1-CC-RV-119B	11448-CBM-072A	1 OF 7	D-3	RELIEF VALVE	1.5	3	C		SP	O	120				
	"B" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
1-CC-RV-122	11448-CBM-072D	1 OF 5	F-6	RELIEF VALVE	3	3	C		SP	O	120				
	COMPONENT COOLING SURGE TANK RELIEF														
1-CC-RV-123	11448-CBM-072D	1 OF 5	F-7	RELIEF VALVE	3	3	C		SP	O	120				
	COMPONENT COOLING SURGE TANK VACUUM RELIEF														
1-CC-RV-124	11448-CBM-072A	5 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	COMPONENT COOLING PIPING RELIEF														
1-CC-RV-138A	11448-CBM-072A	2 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-RV-138B	11448-CBM-072A	3 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-RV-138C	11448-CBM-072A	4 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-TV-105A	11448-CBM-072A	2 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-TV-105A	11448-CBM-072A	2 OF 7	B-4	AO BALL	6	3	B		ST	C	CS		2		
									VP	OC	24				
	CC RETURN FROM "A" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-105B	11448-CBM-072A	3 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		
									ST	C	CS		2		
									VP	OC	24				
	CC RETURN FROM "B" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-105C	11448-CBM-072A	4 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		
									ST	C	CS		2		
									VP	OC	24				
	CC RETURN FROM "C" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-109A	11448-CBM-072A	1 OF 7	B-7	AO BFLY	18	3	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CC RETURN FROM "A" RHR HEAT EXCHANGER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-109B	11448-CBM-072A	1 OF 7	C-7	AO BFLY	18	3	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CC RETURN FROM "B" RHR HEAT EXCHANGER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-110A	11448-CBM-072B	2 OF 3	E-7	AO BFLY	6	3	B		EV	C	03				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-TV-110A	11448-CBM-072B	2 OF 3	E-7	AO BFLY	6	3	B		FS	C	03				
									ST	C	03				
									VP	OC	24				
	CC RETURN FROM "A" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-110B	11448-CBM-072B	2 OF 3	E-5	AO BFLY	6	3	B		EV	C	03				
									FS	C	03				
									ST	C	03				
									VP	OC	24				
	CC RETURN FROM "B" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-110C	11448-CBM-072B	2 OF 3	E-4	AO BFLY	6	3	B		EV	C	03				
									FS	C	03				
									ST	C	03				
									VP	OC	24				
	CC RETURN FROM "C" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-120A	11448-CBM-072A	2 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														
1-CC-TV-120B	11448-CBM-072A	3 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														
1-CC-TV-120C	11448-CBM-072A	4 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-TV-140A	11448-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER, INSIDE CONTAINMENT ISOLATION VALVE														
1-CC-TV-140B	11448-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIERS, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CH-076	11448-CBM-088A	1 OF 4	C-7	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"A" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
1-CH-092	11448-CBM-088A	1 OF 4	C-6	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"B" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
1-CH-225	11448-CBM-088B	1 OF 3	C-3	CHECK VALVE	1	2	C		CV	C	18	5			
										O	RR			20	
	MANUAL EMERGENCY BORATION PATH CHECK VALVE														
1-CH-227	11448-CBM-088B	2 OF 3	A-3	CHECK VALVE	2	2	C		CV	C	18	5			
										O	RR			20	
	MAIN EMERGENCY BORATION LINE TO CHARGING PUMP SUCTION CHECK VALVE														
1-CH-228	11448-CBM-088B	1 OF 3	B-4	MANUAL GATE	1	2	B		EV	O	24				
	MANUAL EMERGENCY PATH BORATION MANUAL VALVE														
1-CH-229	11448-CBM-088B	2 OF 3	A-4	CHECK VALVE	1	2	C		CV	C	18	5			
										O	RR			20	
	MANUAL EMERGENCY BORATION PATH CHECK VALVE, CHARGING PUMP SUCTION CHECK VALVE														
1-CH-230	11448-CBM-088B	1 OF 3	B-6	CHECK VALVE	4	2	C		CV	C	RR			8	
										O	03				
	CHARGING PUMP SUPPLY FROM VOLUME CONTROL TANK DISCHARGE CHECK VALVE														
1-CH-256	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"A" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-258	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"A" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-265	11448-CBM-088B	2 OF 3	D-6	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"B" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-267	11448-CBM-088B	2 OF 3	D-6	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	
	"B" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-274	11448-CBM-088B	2 OF 3	D-4	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"C" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-276	11448-CBM-088B	2 OF 3	D-4	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	
	"C" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-309	11448-CBM-088C	1 OF 2	D-4	CHECK VALVE	3	2	C		CV	C	CS		20		
										O	CS		20		
	MAIN CHARGING SUPPLY HEADER CHECK VALVE														
1-CH-FCV-1113A	11448-CBM-088B	1 OF 3	C-3	AO GLOBE	1	2	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
									VP	OC	24				
	MANUAL EMERGENCY BORATION PATH FLOW CONTROL VALVE														
1-CH-FCV-1114A	11448-CBM-088B	1 OF 3	C-4	AO GLOBE	2	2	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
									VP	OC	24				
	PRIMARY GRADE WATER SUPPLY TO BORIC ACID BLENDER ISOLATION VALVE														
1-CH-FCV-1160	11448-CBM-088C	1 OF 2	B-4	AO GLOBE	2	1	E		VP	OC	24				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CHARGING FLOW CONTROL TO LOOP FILL HEADER, OUTSIDE ISOLATION VALVE														
1-CH-LCV-1460A	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	B		EV	C	CS		7		
									FS	C	CS		7		
									ST	C	CS		7		
									VP	OC	24				
	NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION														
1-CH-LCV-1460B	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	B		EV	C	CS		7		
									FS	C	CS		7		
									ST	C	CS		7		
									VP	OC	24				
	NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION														
1-CH-MOV-1115B	11448-CBM-088B	2 OF 3	B-8	MO GATE	8	2	A		EV	C	03				
										O	03				
									LT	C	24	2			
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK														
1-CH-MOV-1115C	11448-CBM-088B	1 OF 3	C-6	MO GATE	4	2	B		EV	C	CS		5		
									ST	C	CS		5		
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION FROM VOLUME CONTROL TANK														
1-CH-MOV-1115D	11448-CBM-088B	2 OF 3	C-8	MO GATE	8	2	A		EV	C	03				
										O	03				
									LT	C	24	2			
									ST	C	03				
										O	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK														
1-CH-MOV-1115E	11448-CBM-088B	1 OF 3	C-6	MO GATE	4	2	B		EV	C	CS		5		
									ST	C	CS		5		
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM VOLUME CONTROL														
1-CH-MOV-1267A	11448-CBM-088B	2 OF 3	C-7	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
1-CH-MOV-1267B	11448-CBM-088B	2 OF 3	B-7	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
1-CH-MOV-1269A	11448-CBM-088B	2 OF 3	C-5	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
1-CH-MOV-1269B	11448-CBM-088B	2 OF 3	B-5	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
1-CH-MOV-1270A	11448-CBM-088B	2 OF 3	C-3	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
1-CH-MOV-1270B	11448-CBM-088B	2 OF 3	B-3	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
1-CH-MOV-1275A	11448-CBM-088B	2 OF 3	D-7	MO GATE	2	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														
1-CH-MOV-1275B	11448-CBM-088B	2 OF 3	D-5	MO GATE	2	2	B		EV	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CH-MOV-1275B	11448-CBM-088B	2 OF 3	D-5	MO GATE	2	2	B		ST	C	03				
										O	03				
									VP	OC	24				
	"B" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														
1-CH-MOV-1275C	11448-CBM-088B	2 OF 3	D-3	MO GATE	2	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"C" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														
1-CH-MOV-1286A	11448-CBM-088B	2 OF 3	E-7	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1286B	11448-CBM-088B	2 OF 3	E-6	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1286C	11448-CBM-088B	2 OF 3	E-4	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1287A	11448-CBM-088B	2 OF 3	D-7	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CH-MOV-1287A	11448-CBM-088B	2 OF 3	D-7	MO GATE	3	2	B		VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1287B	11448-CBM-088B	2 OF 3	D-6	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1287C	11448-CBM-088B	2 OF 3	D-4	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
1-CH-MOV-1289A	11448-CBM-088C	1 OF 2	B-4	MO GATE	3	2	B		EV	C	CS		8		
									ST	C	CS		8		
									VP	OC	24				
	MAIN CHARGING HEADER ISOLATION VALVE														
1-CH-MOV-1289B	11448-CBM-088C	1 OF 2	B-3	MO GATE	3	2	B		EV	C	CS		8		
									ST	C	CS		8		
									VP	OC	24				
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT														
1-CH-MOV-1350	11448-CBM-088B	1 OF 3	B-5	MO GATE	2	2	B		EV	O	03		11		
									ST	O	03		11		
									VP	OC	24				
	EMERGENCY BORATION TO CHARGING PUMP SUCTION														
1-CH-MOV-1373	11448-CBM-088B	2 OF 3	E-7	MO GATE	3	2	E		VP	OC	24				
	CHARGING PUMP RECIRCULATION HEADER ISOLATION VALVE														
1-CH-MOV-1381	11448-CBM-088B	1 OF 3	C-8	MO GATE	3	2	A	CIV	EV	C	CS		6		
									LT	C	OPB				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CH-MOV-1381	11448-CBM-088B	1 OF 3	C-8	MO GATE	3	2	A	CIV	ST	C	CS		6		
									VP	OC	24				
	REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CH-RV-1203	11448-CBM-088C	1 OF 2	F-4	RELIEF VALVE	2	2	C		SP	O	120				
	LETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANK														
1-CH-RV-1382A	11448-CBM-088C	2 OF 2	F-5	RELIEF VALVE	2	2	C		SP	O	120				
	REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARGE TO PRESSURIZER RELIEF TANK														
1-CH-RV-1382B	11448-CBM-088B	1 OF 3	C-7	RELIEF VALVE	2	2	C		SP	O	120				
	SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK														
1-CH-TV-1204A	11448-CBM-088C	1 OF 2	D-3	AO GATE	2	2	A	CIV	EV	C	CS		7		
									FS	C	CS		7		
									LT	C	OPB				
									ST	C	CS		7		
									VP	OC	24				
	LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE														
1-CH-TV-1204B	11448-CBM-088A	4 OF 4	D-3	AO GATE	2	2	A	CIV	EV	C	CS		7		
									FS	C	CS		7		
									LT	C	OPB				
									ST	C	CS		7		
									VP	OC	24				
	LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CS-013	11448-CBM-084A	2 OF 3	F-4	CHECK VALVE	8	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"A" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE														
1-CS-024	11448-CBM-084A	2 OF 3	E-4	CHECK VALVE	8	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"B" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE														
1-CS-045	11448-CBM-084A	1 OF 3	F-8	CHECK VALVE	2	2	C		CV	C	18	4			
										O	18	4			
	RWST COOLING SYSTEM RETURN ISOLATION CHECK VALVE														
1-CS-105	11448-CBM-084A	2 OF 3	F-3	CHECK VALVE	8	2	C		CV	C	RR			17	
										O	RR			17	
	CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE														
1-CS-127	11448-CBM-084A	2 OF 3	E-3	CHECK VALVE	8	2	C		CV	C	RR			17	
										O	RR			17	
	CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE														
1-CS-MOV-100A	11448-CBM-084A	2 OF 3	B-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE														
1-CS-MOV-100B	11448-CBM-084A	2 OF 3	A-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE														
1-CS-MOV-101A	11448-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CS-MOV-101A	11448-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	ST	C	03				
										O	03				
									VP	OC	24				
	"A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CS-MOV-101B	11448-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CS-MOV-101C	11448-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CS-MOV-101D	11448-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CS-MOV-102A	11448-CBM-084A	3 OF 3	C-6	MO GATE	6	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CS-MOV-102B	11448-CBM-084A	3 OF 3	B-6	MO GATE	6	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CV-002	11448-CBM-085A	1 OF 2	D-4	MAN GATE	8	2	AE	CIV	LT	C	OPB				
	CONTAINMENT VACUUM EJECTOR SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CV-HCV-100	11448-CBM-085A	1 OF 2	D-3	AO GATE	8	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	CONTAINMENT VACUUM EJECTOR, INSIDE CONTAIN- MENT ISOLATION														
1-CV-TV-150A	11448-CBM-085A	2 OF 2	E-4	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"A" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CV-TV-150B	11448-CBM-085A	2 OF 2	E-5	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"A" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CV-TV-150C	11448-CBM-085A	2 OF 2	D-4	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"B" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CV-TV-150D	11448-CBM-085A	2 OF 2	D-5	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CW-MOV-100A	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
1-CW-MOV-100B	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
1-CW-MOV-100C	11448-CBM-071A	2 OF 4	F-6	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
1-CW-MOV-100D	11448-CBM-071A	2 OF 4	F-5	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
1-CW-MOV-106A	11448-CBM-071A	2 OF 4	D-7	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
1-CW-MOV-106B	11448-CBM-071A	2 OF 4	D-7	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
1-CW-MOV-106C	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
1-CW-MOV-106D	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CW-MOV-106D	11448-CBM-071A CONDENSER INLET ISOLATION VALVE	2 OF 4	D-5	MO BFLY	96	3	B		VP	OC	24				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-DA-TV-100A	11448-CBM-083B	3 OF 3	B-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE														
1-DA-TV-100B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-DA-TV-103A	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-DA-TV-103B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT TRIP VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-DG-TV-108A	11448-CBM-083B	1 OF 3	B-2	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE														
1-DG-TV-108B	11448-CBM-083A	1 OF 3	C-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-EE-015	11448-FB -038A	2 OF 3	B-7	CHECK VALVE	1.5	NC	C		CV	C	18				6
										O	03				
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-019	11448-FB -038A	2 OF 3	F-7	CHECK VALVE	1.5	NC	C		CV	C	18				6
										O	03				
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-028	11448-FB -038A	2 OF 3	F-6	CHECK VALVE	1.5	NC	C		CV	C	18				6
										O	03				
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-035	11448-FB -038A	2 OF 3	B-6	CHECK VALVE	1.5	NC	C		CV	C	18				6
										O	03				
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-RV-103	11448-FB -038A	1 OF 3	C-7	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-105	11448-FB -038A	1 OF 3	F-7	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-106	11448-FB -038A	1 OF 3	C-6	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-108	11448-FB -038A	1 OF 3	E-6	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-SOV-100	11448-FB -038A	2 OF 3	C-4	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				3
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-101	11448-FB -038A	2 OF 3	B-4	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				3

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-104	11448-FB -038A	2 OF 3	F-4	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				3
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-105	11448-FB -038A	2 OF 3	F-4	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				3
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-EG-040	11448-FB -046A	1 OF 3	B-8	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
1-EG-042	11448-FB -046A	1 OF 3	B-4	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
1-EG-043	11448-FB -046A	1 OF 3	E-7	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
1-EG-044	11448-FB -046A	1 OF 3	E-3	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
1-EG-045	11448-FB -046A	1 OF 3	E-7	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
1-EG-046	11448-FB -046A	1 OF 3	E-4	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
1-EG-SOV-100A	11448-FB -046A	1 OF 3	E-7	SO GATE	1	NC	B		EV	C	03				
										O	03				
									ST	C	03				2
										O	03				2
	DIESEL AIR START SYSTEM SOLENOID VALVE														
1-EG-SOV-100B	11448-FB -046A	1 OF 3	E-4	SO GATE	1	NC	B		EV	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-EG-SOV-100B	11448-FB -046A	1 OF 3	E-4	SO GATE	1	NC	B		ST	C	03				2
										O	03				2
	DIESEL AIR START SYSTEM SOLENOID VALVE														
3-EG-040	11448-FB -046C	1 OF 3	B-8	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
3-EG-042	11448-FB -046C	1 OF 3	B-4	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
3-EG-043	11448-FB -046C	1 OF 3	E-7	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
3-EG-044	11448-FB -046C	1 OF 3	E-3	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
3-EG-045	11448-FB -046C	1 OF 3	E-7	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
3-EG-046	11448-FB -046C	1 OF 3	E-4	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
3-EG-SOV-300A	11448-FB -046C	1 OF 3	E-7	SO GATE	1	NC	B		EV	C	03				
										O	03				
									ST	C	03				2
										O	03				2

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	DIESEL AIR START SYSTEM SOLENOID VALVE														
3-EG-SOV-300B	11448-FB -046C	1 OF 3	E-4	SO GATE	1	NC	B		EV	C	03				
										O	03				
									ST	C	03				2
										O	03				2
	DIESEL AIR START SYSTEM SOLENOID VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FP-151	11448-CBB-047B	1 OF 3	D-6	MAN BALL	4	2	AE	CIV	LT	C	OPB				
	FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-FP-152	11448-CBB-047B	1 OF 3	E-6	MAN BALL	4	2	AE	CIV	LT	C	OPB				
	FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-010	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"A" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-027	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"A" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-041	11448-CBM-068A	1 OF 4	D-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"B" MAIN FEEDWATER HEADER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-058	11448-CBM-068A	1 OF 4	C-6	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"B" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-072	11448-CBM-068A	1 OF 4	C-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"C" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-089	11448-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"C" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-131	11448-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
1-FW-133	11448-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
1-FW-136	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
1-FW-138	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
1-FW-142	11448-CBM-068A	3 OF 4	D-8	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
1-FW-144	11448-CBM-068A	3 OF 4	D-7	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK														
1-FW-148	11448-CBM-068A	3 OF 4	E-7	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
1-FW-157	11448-CBM-068A	3 OF 4	D-6	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
1-FW-159	11448-CBM-068A	3 OF 4	D-6	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
1-FW-163	11448-CBM-068A	3 OF 4	E-6	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-172	11448-CBM-068A	3 OF 4	D-5	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
1-FW-174	11448-CBM-068A	3 OF 4	D-5	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
1-FW-178	11448-CBM-068A	3 OF 4	E-4	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
1-FW-272	11448-CBM-068A	1 OF 4	A-8	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
1-FW-273	11448-CBM-068A	1 OF 4	A-7	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
1-FW-309	11448-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
1-FW-310	11448-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
1-FW-FCV-1478	11448-CBM-068A	1 OF 4	E-5	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	MAIN FEEDWATER REGULATING VALVE														
1-FW-FCV-1488	11448-CBM-068A	1 OF 4	D-5	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE														
1-FW-FCV-1498	11448-CBM-068A	1 OF 4	B-5	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE														
1-FW-HCV-155A	11448-CBM-068A	1 OF 4	F-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
1-FW-HCV-155B	11448-CBM-068A	1 OF 4	D-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
1-FW-HCV-155C	11448-CBM-068A	1 OF 4	C-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
1-FW-MOV-151A	11448-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				

VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	NORMAL AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR														
1-FW-MOV-151B	11448-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR														
1-FW-MOV-151C	11448-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR														
1-FW-MOV-151D	11448-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	NORMAL AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR														
1-FW-MOV-151E	11448-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR														
1-FW-MOV-151F	11448-CBM-068A	1 OF 4	B-5	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-MOV-160A	11548-CBM-068A	3 OF 4	F-7	MO GLOBE	6	3	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2														
1-FW-MOV-160B	11548-CBM-068A	3 OF 4	F-7	MO GLOBE	6	3	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-GW-TV-100	11448-CBM-090C	1 OF 1	C-6	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1														
1-GW-TV-101	11448-CBM-090C	1 OF 1	C-6	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1														
1-GW-TV-102	11448-CBM-090C	1 OF 1	A-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1														
1-GW-TV-103	11448-CBM-090C	1 OF 1	A-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1														
1-GW-TV-104	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-GW-TV-105	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	2	A	CIV	EV	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-GW-TV-105	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	2	A	CIV	FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-GW-TV-106	11448-CBM-090C	1 OF 1	D-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-GW-TV-107	11448-CBM-090C	1 OF 1	D-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-GW-TV-111A	11448-CBM-090C	1 OF 1	F-8	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, INSIDE CONTAINMENT ISOLATION VALVE														
1-GW-TV-111B	11448-CBM-090C	1 OF 1	F-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-IA-446	11448-CBM-075C	1 OF 5	D-8	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	BACKUP INSTRUMENT AIR TO CONTAINMENT														
1-IA-704	11548-CBM-075B	2 OF 2	C-3	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	BACKUP INSTRUMENT AIR TO CONTAINMENT														
1-IA-928	11448-FM -075E	2 OF 2	B-7	CHECK VALVE	0.75	NC	AC		CV	C	RR				1
										O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 1-RC-PCV-1456 ISOLATION CHECK VALVE														
1-IA-938	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-IA-939	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-IA-947	11448-FM -075C	3 OF 5	D-4	CHECK VALVE	0.5	NC	AC		CV	C	RR				1
										O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 1-MS-SOV-102A,B ISOLATION CHECK VALVE														
1-IA-948	11448-FM -075C	3 OF 5	D-4	CHECK VALVE	0.5	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 1-MS-SOV-102A,B SUPPLY CHECK VALVE														
1-IA-949	11448-FM -075E	2 OF 2	B-7	CHECK VALVE	0.75	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 1-RC-PCV-1456 SUPPLY CHECK VALVE														
1-IA-952	11448-FM -075E	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		CV	C	RR				1

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-IA-952	11448-FM -075E	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		CV	O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 1-RC-PCV-1455C ISOLATION CHECK VALVE														
1-IA-953	11448-FM -075E	2 OF 2	B-4	CHECK VALVE	0.75	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 1-RC-PCV-1455C SUPPLY CHECK VALVE														
1-IA-RV-114	11448-FM -075E	2 OF 2	A-7	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE														
1-IA-RV-115	11448-FM -075E	2 OF 2	A-4	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE														
1-IA-RV-126	11448-FM -075E	2 OF 2	B-7	RELIEF VALVE	0.75	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE														
1-IA-RV-127	11448-FM -075E	2 OF 2	B-4	RELIEF VALVE	0.75	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE														
1-IA-TV-100	11448-CBM-075C	1 OF 5	E-8	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-IA-TV-101A	11448-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUCTION FROM CONTAINMENT														
1-IA-TV-101B	11448-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-IA-TV-101B	11448-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUCTION FROM CONTAINMENT														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-LM-TV-100A	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100B	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100C	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100D	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100E	11448-CBM-085A	1 OF 2	B-4	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100F	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100G	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-LM-TV-100H	11448-CBM-085A	1 OF 2	B-7	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-MS-087	11448-CBM-064A	1 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILARY FEEDWATER PUMP ISOLATION VALVE														
1-MS-120	11448-CBM-064A	2 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE														
1-MS-158	11448-CBM-064A	3 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE														
1-MS-176	11448-CBM-064A	4 OF 6	C-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"A" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
1-MS-178	11448-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"B" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
1-MS-182	11448-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"C" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
1-MS-NRV-101A	11448-CBM-064A	1 OF 6	E-4	MO STOP CHECK	30	NC	C		CV	C	RR				4
										O	RR				4
									VP	OC	24				
	"A" MAIN STEAM HEADER NON-RETURN VALVE														
1-MS-NRV-101B	11448-CBM-064A	2 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	C	RR				4
										O	RR				4
									VP	OC	24				
	"B" MAIN STEAM HEADER NON-RETURN VALVE														
1-MS-NRV-101C	11448-CBM-064A	3 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	C	RR				4

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-MS-NRV-101C	11448-CBM-064A	3 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	O	RR				4
									VP	OC	24				
	"C" MAIN STEAM HEADER NON-RETURN VALVE														
1-MS-PCV-102A	11448-CBM-064A	4 OF 6	C-4	AO GATE	3	2	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
1-MS-PCV-102B	11448-CBM-064A	4 OF 6	D-5	AO GATE	3	2	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
1-MS-RV-101A	11448-CBM-064A	1 OF 6	E-5	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	
									ST	C	NA	1			
									VP	OC	24				
	"A" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
1-MS-RV-101B	11448-CBM-064A	2 OF 6	E-6	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	
									ST	C	NA	1			
									VP	OC	24				
	"B" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
1-MS-RV-101C	11448-CBM-064A	3 OF 6	E-5	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-MS-RV-101C	11448-CBM-064A	3 OF 6	E-5	AO ANGLE	4	2	B		ST VP	C OC	NA 24	1			
	"C" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
1-MS-SV-101A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	4	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-101B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	4	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-101C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	4	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-102A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-102B	11448-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-102C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-103A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-103B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGEE TO ATMOS														
1-MS-SV-103C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105A	11448-CBM-064A	1 OF 6	E-5	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105B	11448-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105C	11448-CBM-064A	3 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-TV-101A	11448-CBM-064A	1 OF 6	D-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"A" MAIN STEAM HEADER TRIP VALVE														
1-MS-TV-101B	11448-CBM-064A	2 OF 6	C-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"B" MAIN STEAM HEADER TRIP VALVE														
1-MS-TV-101C	11448-CBM-064A	3 OF 6	C-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"C" MAIN STEAM HEADER TRIP VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RC-160	11448-CBM-086B	2 OF 3	D-7	CHECK VALVE	3	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	PRIMARY GRADE WATER SUPPLY TO PRESSURIZER RELIEF TANK														
1-RC-HCV-1556A	11448-CBM-086A	1 OF 3	E-8	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
1-RC-HCV-1556B	11448-CBM-086A	2 OF 3	D-8	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
1-RC-HCV-1556C	11448-CBM-086A	3 OF 3	D-3	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
1-RC-MOV-1535	11448-CBM-086B	1 OF 3	E-4	MO GATE	3	1	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE														
1-RC-MOV-1536	11448-CBM-086B	1 OF 3	D-4	MO GATE	3	1	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE														
1-RC-PCV-1455C	11448-CBM-086B	1 OF 3	D-3	AO PLUG	3	1	BC		EV	C	CS		3		
										O	CS		3		
									FS	C	CS		3		
									SP	O	60				
									ST	C	CS		3		
										O	CS		3		
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	PRESSURIZER POWER OPERATED PRESSURE CONTROL VALVE DISCHARGE TO PRESSURIZER RELIEF TANK														
1-RC-PCV-1456	11448-CBM-086B	1 OF 3	E-3	AO PLUG	3	1	BC		EV	C	CS		3		
										O	CS		3		
									FS	C	CS		3		
									SP	O	60				
									ST	C	CS		3		
										O	CS		3		
									VP	OC	24				
	PRESSURIZER POWER OPERATED PRESSURE CONTROL VALVE DISCHARGE TO PRESSURIZER RELIEF TANK														
1-RC-SOV-100A1	11448-CBM-086A	3 OF 3	B-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
1-RC-SOV-100A2	11448-CBM-086A	3 OF 3	A-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
1-RC-SOV-100B1	11448-CBM-086A	3 OF 3	B-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RC-SOV-100B2	11448-CBM-086A	3 OF 3	A-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
1-RC-SV-1551A	11448-CBM-086B	1 OF 3	E-6	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
1-RC-SV-1551B	11448-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
1-RC-SV-1551C	11448-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
1-RC-TV-1519A	11448-CBM-086B	2 OF 3	D-7	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY GRADE WATER SUPPLY TO PRT-#2 RCP SEAL STANDPIPES & FLUSH CONNECT, OUT CONT ISO VLV														

VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RH-005	11448-CBM-087A	1 OF 2	E-5	CHECK VALVE	10	2	C		CV	C	CS		4		
										O	CS		4		
	"B" RHR PUMP DISCHARGE CHECK VALVE														
1-RH-011	11448-CBM-087A	1 OF 2	E-7	CHECK VALVE	10	2	C		CV	C	CS		4		
										O	CS		4		
	"A" RHR PUMP DISCHARGE CHECK VALVE														
1-RH-047	11448-CBM-087A	2 OF 2	D-4	MANUAL GATE	6	2	AE	CIV	LT	C	OPB				
	RHR SUPPLY TO REFUEL WATER STORAGE TANK, INSIDE CONTAINMENT ISOLATION VALVE														
1-RH-100	11448-CBM-087A	2 OF 2	E-3	MANUAL GATE	6	2	AE	CIV	LT	C	OPB				
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RH-MOV-1700	11448-CBM-087A	1 OF 2	A-5	MO GATE	14	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
1-RH-MOV-1701	11448-CBM-087A	1 OF 2	A-4	MO GATE	14	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
1-RH-MOV-1720A	11448-CBM-087A	2 OF 2	C-3	MO GATE	10	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR RETURN ISOLATION TO "B" ACCUMULATOR DISCHARGE LINE														
1-RH-MOV-1720B	11448-CBM-087A	2 OF 2	B-3	MO GATE	10	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR RETURN ISOLATION TO "C" ACCUMULATOR DISCHARGE LINE														
1-RH-RV-1721	11448-CBM-087A	2 OF 2	D-4	RELIEF VALVE	3	2	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	RHR SYSTEM RELIEF VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RL-003	11448-CBM-118A	2 OF 3	D-3	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM RP PUMPS TO REACTOR CAVITY, OUTSIDE CONT ISOLATION VALVE														
1-RL-005	11448-CBM-118A	2 OF 3	D-5	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM RP PUMPS TO REACTOR CAVITY, INSIDE CONT ISOLATION VALVE														
1-RL-013	11448-CBM-118A	2 OF 3	B-4	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM REACTOR CAVITY TO RP PUMPS, INSIDE CONT ISOLATION VALVE														
1-RL-015	11448-CBM-118A	2 OF 3	B-3	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM REACTOR CAVITY TO RP PUMPS, OUTSIDE CONT ISOLATION VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RM-003	11448-CBM-130B	1 OF 1	B-5	CHECK VALVE	0.75	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	RETURN TO CONTAINMENT FROM RADIATION MONITORING CABINET, INSIDE CONT ISOL CHECK VALVE														
1-RM-TV-100A	11448-CBM-130B	1 OF 1	B-4	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN ISOLATION FROM AIR RADIATION MONITOR TO CONTAINMENT, OUTSIDE CONT ISOLATION VALVE														
1-RM-TV-100B	11448-CBM-130B	1 OF 1	F-8	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, OUTSIDE CONT ISOLATION VALVE														
1-RM-TV-100C	11448-CBM-130B	1 OF 1	E-8	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, INSIDE CONT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RS-011	11448-CBM-084B	2 OF 2	E-4	CHECK VALVE	10	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"B" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-RS-017	11448-CBM-084B	2 OF 2	D-5	CHECK VALVE	10	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"A" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-RS-MOV-155A	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLATION VALVE FROM CONTAINMENT SUMP														
1-RS-MOV-155B	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLATION VALVE FROM CONTAINMENT SUMP														
1-RS-MOV-156A	11448-CBM-084B	2 OF 2	D-6	MO BFLY	10	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP DISCHARGE ISOLATION, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RS-MOV-156B	11448-CBM-084B	2 OF 2	E-6	MO BFLY	10	2	A	CIV	EV	C	03				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RS-MOV-156B	11448-CBM-084B	2 OF 2	E-6	MO BFLY	10	2	A	CIV	EV	O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP DISCHARGE ISOLATION, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RT-02	11448-CBM-124A	1 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-06	11448-CBM-124A	1 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RT-21	11448-CBM-124A	2 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-25	11448-CBM-124A	2 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RT-40	11448-CBM-124A	3 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-44	11448-CBM-124A	3 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SA-060	11448-CBM-075G	1 OF 1	C-7	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, INSIDE CONTAINMENT ISOLATION VALVE														
1-SA-062	11448-CBM-075G	1 OF 1	C-7	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-025	11448-CBM-089A	1 OF 3	F-5	CHECK VALVE	8	2	AC		CV	C	RR			5	
										O	RR			5	
									LT	C	24	2			
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER														
1-SI-032	11448-CBM-089A	1 OF 3	E-7	MAN GLOBE	1	2	AE	CIV	LT	C	OPB				
	ACCUMULATOR MAKEUP LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-046A	11448-CBM-089A	1 OF 3	A-3	CHECK VALVE	12	2	C		CV	C	RR			2	
										O	RR			2	
	RWST SUPPLY CHECK VALVE TO "A" LOW HEAD SI PUMP SUCTION														
1-SI-046B	11448-CBM-089A	1 OF 3	B-3	CHECK VALVE	12	2	C		CV	C	RR			2	
										O	RR			2	
	RWST SUPPLY CHECK VALVE TO "B" LOW HEAD SI PUMP SUCTION														
1-SI-047	11448-CBM-089A	1 OF 3	B-5	CHECK VALVE	12	2	C		CV	C	RR			14	
										O	RR			14	
	"B" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT														
1-SI-050	11448-CBM-089A	1 OF 3	C-4	CHECK VALVE	10	2	C		CV	C	RR			2	
										O	RR			2	
	"B" LOW HEAD SI PUMP DISCHARGE CHECK VALVE														
1-SI-053	11448-CBM-089A	2 OF 3	C-4	CHECK VALVE	2	2	C		CV	C	RR			2	
										O	03				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK														
1-SI-056	11448-CBM-089A	1 OF 3	B-7	CHECK VALVE	12	2	C		CV	C	RR			14	
										O	RR			14	
	"A" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT														
1-SI-058	11448-CBM-089A	1 OF 3	C-6	CHECK VALVE	10	2	C		CV	C	RR			2	
										O	RR			2	
	"A" LOW HEAD SI PUMP DISCHARGE CHECK VALVE														
1-SI-061	11448-CBM-089A	2 OF 3	B-7	CHECK VALVE	2	2	C		CV	C	RR			2	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-061	11448-CBM-089A	2 OF 3	B-7	CHECK VALVE	2	2	C		CV	O	03				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK														
1-SI-073	11448-CBM-089A	2 OF 3	F-7	MAN GLOBE	0.75	2	AE	CIV	LT	C	OPB				
	ACCUMULATOR TEST LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-079	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-082	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-085	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-088	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-091	11448-CBM-089B	4 OF 4	C-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-094	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-107	11448-CBM-089B	1 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"A" ACCUMULATOR DISCHARGE CHECK VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-109	11448-CBM-089B	1 OF 4	B-8	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-128	11448-CBM-089B	2 OF 4	B-6	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"B" ACCUMULATOR DISCHARGE CHECK VALVE														
1-SI-130	11448-CBM-089B	2 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-145	11448-CBM-089B	3 OF 4	B-5	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"C" ACCUMULATOR DISCHARGE CHECK VALVE														
1-SI-147	11448-CBM-089B	3 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-224	11448-CBM-089B	4 OF 4	F-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE														
1-SI-225	11448-CBM-089B	4 OF 4	E-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE														
1-SI-226	11448-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
1-SI-227	11448-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
1-SI-228	11448-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
1-SI-229	11448-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
1-SI-234	11448-CBM-089B	1 OF 4	F-3	CHECK VALVE	1	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	NITROGEN SUPPLY TO ACCUMULATORS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-SI-235	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
1-SI-236	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
1-SI-237	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
1-SI-238	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
1-SI-239	11448-CBM-089B	4 OF 4	C-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
1-SI-240	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
1-SI-241	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-242	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-243	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-410	11448-CBM-089A	1 OF 3	F-4	CHECK VALVE	10	2	C		CV	C	RR			5	
										O	RR			5	
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER														
1-SI-MOV-1842	11448-CBM-089A	3 OF 3	D-7	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		13		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS ISOLATION VALVE														
1-SI-MOV-1860A	11448-CBM-089A	1 OF 3	B-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"A" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP														
1-SI-MOV-1860B	11448-CBM-089A	1 OF 3	B-5	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP														
1-SI-MOV-1862A	11448-CBM-089A	1 OF 3	A-3	MO GATE	12	2	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP SUCTION FROM RWST														
1-SI-MOV-1862B	11448-CBM-089A	1 OF 3	B-3	MO GATE	12	2	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP SUCTION FROM RWST														
1-SI-MOV-1863A	11448-CBM-089A	2 OF 3	C-5	MO GATE	8	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS														
1-SI-MOV-1863B	11448-CBM-089A	2 OF 3	D-3	MO GATE	8	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS														
1-SI-MOV-1864A	11448-CBM-089A	2 OF 3	D-6	MO GATE	10	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-MOV-1864A	11448-CBM-089A	2 OF 3	D-6	MO GATE	10	2	B		VP	OC	24				
	"A" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE														
1-SI-MOV-1864B	11448-CBM-089A	2 OF 3	D-4	MO GATE	10	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE														
1-SI-MOV-1865A	11448-CBM-089B	1 OF 4	C-7	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"A" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
1-SI-MOV-1865B	11448-CBM-089B	2 OF 4	C-6	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"B" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
1-SI-MOV-1865C	11448-CBM-089B	3 OF 4	C-5	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"C" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
1-SI-MOV-1867C	11448-CBM-089A	3 OF 3	E-6	MO GATE	3	2	B		EV	C	CS		10		
										O	CS		10		
									ST	C	CS		10		
										O	CS		10		
									VP	OC	24				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	HIGH HEAD SAFETY INJECTION TO RCS COLD LEG ISOLATION VALVE														
1-SI-MOV-1867D	11448-CBM-089A	3 OF 3	F-6	MO GATE	3	2	B		EV	C	CS		10		
										O	CS		10		
									ST	C	CS		10		
										O	CS		10		
									VP	OC	24				
	HIGH HEAD SAFETY INJECTION TO RCS COLD LEG ISOLATION VALVE														
1-SI-MOV-1869A	11448-CBM-089A	3 OF 3	D-7	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		13		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS ISOLATION VALVE														
1-SI-MOV-1869B	11448-CBM-089A	3 OF 3	E-4	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		13		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS ISOLATION VALVE														
1-SI-MOV-1885A	11448-CBM-089A	2 OF 3	B-6	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
1-SI-MOV-1885B	11448-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-MOV-1885C	11448-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
1-SI-MOV-1885D	11448-CBM-089A	2 OF 3	B-6	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
1-SI-MOV-1890A	11448-CBM-089A	2 OF 3	C-7	MO GATE	10	2	B		EV	C	CS		19		
										O	CS		19		
									ST	C	CS		19		
										O	CS		19		
									VP	OC	24				
	"A" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP ISOLATION VALVE														
1-SI-MOV-1890B	11448-CBM-089A	2 OF 3	E-7	MO GATE	10	2	B		EV	C	CS		19		
										O	CS		19		
									ST	C	CS		19		
										O	CS		19		
									VP	OC	24				
	"B" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP ISOLATION VALVE														
1-SI-MOV-1890C	11448-CBM-089A	2 OF 3	D-7	MO GATE	10	2	B		EV	C	CS		9		
										O	CS		9		
									ST	C	CS		9		
										O	CS		9		
									VP	OC	24				
	LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP ISOLATION VALVE														
1-SI-RV-1845A	11448-CBM-089A	2 OF 3	E-6	RELIEF VALVE	1	2	C		SP	O	120				
	"A" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-RV-1845B	11448-CBM-089A	2 OF 3	E-5	RELIEF VALVE	1	2	C		SP	O	120				
	LOW HEAD SI HEADER TO COLD LEG RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
1-SI-RV-1845C	11448-CBM-089A	2 OF 3	E-5	RELIEF VALVE	1	2	C		SP	O	120				
	"B" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
1-SI-RV-1858A	11448-CBM-089B	1 OF 4	E-7	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
1-SI-RV-1858B	11448-CBM-089B	2 OF 4	E-6	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
1-SI-RV-1858C	11448-CBM-089B	3 OF 4	F-5	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
1-SI-TV-100	11448-CBM-089A	3 OF 3	B-7	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	NITROGEN SUPPLY TO ACCUMULATORS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-TV-101A	11448-CBM-089B	1 OF 4	C-3	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, INSIDE CONTAINMENT ISOLATION VALVE														
1-SI-TV-101B	11448-CBM-089B	1 OF 4	B-2	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-TV-102A	11448-CBM-089A	1 OF 3	F-7	AO GATE	8	2	B		EV	O	03				
									FS	O	03				
									ST	O	03				
									VP	OC	24				
	UNIT 1 RWST TO UNIT 2 RWST CROSS TIE														
1-SI-TV-102B	11448-CBM-089A	1 OF 3	E-7	AO GATE	8	2	B		EV	O	03				
									FS	O	03				
									ST	O	03				
									VP	OC	24				
	UNIT 1 RWST TO UNIT 2 RWST CROSS TIE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SS-TV-100A	11448-CBM-082B	2 OF 2	F-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER LIQUID SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-100B	11448-CBM-082B	2 OF 2	F-6	AO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER LIQUID SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-101A	11448-CBM-082B	2 OF 2	E-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER VAPOR SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-101B	11448-CBM-082B	2 OF 2	E-6	AO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER VAPOR SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-102A	11448-CBM-082B	2 OF 2	D-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	REACTOR COOLANT COLD LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-102B	11448-CBM-082B	2 OF 2	D-6	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-103A	11448-CBM-082B	2 OF 2	F-7	SO GATE	0.375	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-103B	11448-CBM-082B	2 OF 2	F-6	SO GATE	0.375	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-104A	11448-CBM-082B	2 OF 2	D-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-104B	11448-CBM-082B	2 OF 2	C-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-106A	11448-CBM-082B	2 OF 2	E-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SS-TV-106A	11448-CBM-082B	2 OF 2	E-7	SO GATE	0.375	1	A	CIV	ST	C	03				
									VP	OC	24				
	REACTOR COOLANT HOT LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
1-SS-TV-106B	11448-CBM-082B	2 OF 2	E-6	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR COOLANT HOT LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SV-TV-102A	11448-CBM-066A	2 OF 3	E-4	AO GATE	6	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONDENSER AIR REMOVAL DISCHARGE TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-012	11448-CBM-071A	2 OF 4	C-4	BUTTERFLY	10	3	B		EV	C	24				
	SERVICE WATER SUPLY HEADER TO CHILLED WATER SYSTEM MANUAL ISOLATION VALVE														
1-SW-108	11448-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP SERVICE WATER PUMP CHECK VALVE														
1-SW-113	11448-CBM-071B	1 OF 2	B-7	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP SERVICE WATER PUMP CHECK VALVE														
1-SW-206	11448-CBM-071A	3 OF 4	E-8	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER														
1-SW-208	11448-CBM-071A	3 OF 4	E-8	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER														
1-SW-246	11448-CBM-071A	3 OF 4	C-8	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
1-SW-247	11448-CBM-071A	3 OF 4	D-7	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
1-SW-248	11448-CBM-071A	3 OF 4	C-7	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
1-SW-249	11448-CBM-071A	3 OF 4	D-6	CHECK VALVE	3	3	C		CV	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
1-SW-250	11448-CBM-071A	3 OF 4	C-6	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
1-SW-251	11448-CBM-071A	3 OF 4	D-5	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
1-SW-252	11448-CBM-071A	3 OF 4	C-5	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
1-SW-253	11448-CBM-071A	3 OF 4	D-4	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
1-SW-262	11448-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	C		CV	C	RR			22	
										O	03				
	CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE														
1-SW-264	11448-CBM-071D	1 OF 2	C-5	MANUAL BFLY	6	3	B		EV	O	24				
	CONTROL ROOM CONDENSER WATER TO BACKUP STRAINER BYPASS LINE ISOLATION VALVE														
1-SW-265	11448-CBM-071D	1 OF 2	C-7	MANUAL BFLY	6	3	B		EV	O	24				
	CONTROL ROOM CONDENSER WATER TO BACKUP STRAINER BYPASS LINE ISOLATION VALVE														
1-SW-268	11448-CBM-071B	1 OF 2	B-6	CHECK VALVE	2	3	C		CV	C	RR			22	
										O	03				
	CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-313	11448-CBM-071D	1 OF 2	F-7	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE														
1-SW-323	11448-CBM-071D	1 OF 2	F-5	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE														
1-SW-773	11448-CBM-071D	2 OF 2	C-5	CHECK VALVE	4	3	C		CV	C	18	3			
										O	03				
	CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE														
1-SW-778	11448-CBM-071D	2 OF 2	C-4	CHECK VALVE	4	3	C		CV	C	18	3			
										O	03				
	CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE VALVE														
1-SW-839	11448-CBM-071D	2 OF 2	F-5	CHECK VALVE	3	3	C		CV	C	18	3			
										O	18	3			
	CONTROL ROOM CONDENSER WATER SYSTEM DISCHARGE CHECK VALVE														
1-SW-840	11448-CBM-071D	2 OF 2	F-4	CHECK VALVE	3	3	C		CV	C	18	3			
										O	18	3			
	CONTROL ROOM CONDENSER WATER SYSTEM DISCHARE CHECK VALVE														
1-SW-MOV-101A	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE														
1-SW-MOV-101B	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-MOV-102A	11448-CBM-071A	2 OF 4	D-6	MO BFLY	42	3	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS														
1-SW-MOV-102B	11448-CBM-071A	2 OF 4	D-5	MO BFLY	42	3	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS														
1-SW-MOV-103A	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30	3	B		EV	O	RR			24	
									ST	O	RR			24	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
1-SW-MOV-103B	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30	3	B		EV	O	RR			24	
									ST	O	RR			24	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
1-SW-MOV-103C	11448-CBM-071A	3 OF 4	B-3	MO BFLY	30	3	B		EV	O	RR			24	
									ST	O	RR			24	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
1-SW-MOV-103D	11448-CBM-071A	3 OF 4	B-2	MO BFLY	30	3	B		EV	O	RR			24	
									ST	O	RR			24	
									VP	OC	24				

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
1-SW-MOV-104A	11448-CBM-071A	3 OF 4	D-7	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-104B	11448-CBM-071A	3 OF 4	D-6	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-104C	11448-CBM-071A	3 OF 4	D-5	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-104D	11448-CBM-071A	3 OF 4	D-4	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-105A	11448-CBM-071A	3 OF 4	D-8	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-MOV-105A	11448-CBM-071A	3 OF 4	D-8	MO BFLY	24	3	B		ST	O	RR			24	
									VP	OC	24				
	SERVICE WATER RETURN FROM "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-105B	11448-CBM-071A	3 OF 4	D-7	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER RETURN FROM "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-105C	11448-CBM-071A	3 OF 4	D-6	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER RETURN FROM "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-MOV-105D	11448-CBM-071A	3 OF 4	D-5	MO BFLY	24	3	B		EV	C	RR			24	
										O	RR			24	
									ST	C	RR			24	
										O	RR			24	
									VP	OC	24				
	SERVICE WATER RETURN FROM "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
1-SW-PCV-100A	11448-CBM-071D	1 OF 2	F-7	AO GATE	3	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-100B	11448-CBM-071D	1 OF 2	F-5	AO GATE	3	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-100C	11448-CBM-071D	1 OF 2	F-3	AO GATE	3	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-100D	11448-CBM-071D	2 OF 2	F-5	AO GATE	3	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-100E	11448-CBM-071D	2 OF 2	F-4	AO GATE	3	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-101A	11448-CBM-071D	1 OF 2	E-8	AO GATE	3	3	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-101B	11448-CBM-071D	1 OF 2	E-6	AO GATE	3	3	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-101C	11448-CBM-071D	1 OF 2	E-4	AO GATE	3	3	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														
1-SW-PCV-101D	11448-CBM-071D	2 OF 2	D-5	AO GATE	3	3	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-PCV-101E	11448-CBM-071D	2 OF 2	D-3	AO GATE	3	3	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
	CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONROL														
1-SW-RV-124D	11448-CBM-071D	2 OF 2	D-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	CONTROL ROOM CONDENSER RELIEF VALVE														
1-SW-RV-124E	11448-CBM-071D	2 OF 2	D-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	CONTROL ROOM CONDENSER RELIEF VALVE														
1-SW-TCV-108A	11448-CBM-071B	1 OF 2	E-7	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														
1-SW-TCV-108B	11448-CBM-071B	1 OF 2	E-5	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														
1-SW-TCV-108C	11448-CBM-071B	1 OF 2	E-4	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														
2-SW-333	11448-CBM-071D	1 OF 2	F-3	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VA-001	11448-CBM-083A	1 OF 3	B-7	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	VENT LINE FROM PRIMARY VENT POT, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-VA-006	11448-CBM-083B	3 OF 3	F-2	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	VENT LINE FROM PRIMARY VENT POT, INSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VG-TV-109A	11448-CBM-083B	1 OF 3	F-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	VENT LINE ISOL FROM PRIMARY DRAINS TRANSFER TANK TO GAS STRIPPERS, INSIDE CONT ISOL VLV														
1-VG-TV-109B	11448-CBM-083A	1 OF 3	F-7	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	VENT LINE ISOL FROM PRIMARY DRAINS TRANSFER TANK TO GAS STRIPPERS, OUTSIDE CONT ISOL VLV														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VP-012	11448-CBM-066A	2 OF 3	F-4	CHECK VALVE	6	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	CONDENSER AIR REMOVAL DISCHARG TO CONTAINMENT INSIDE CONTAIN ISOLATION CHECK VALVE														

SURRY UNIT 1
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VS-285	11448-CBB-041A	2 OF 3	C-6	MANUAL GATE	3	3	B		EV	C	24				
										O	24				
	CONTROL ROOM CHILLED WATER CROSS TIE ISOLATION VALVE														
1-VS-288	11448-CBB-041A	2 OF 3	B-7	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-292	11448-CBB-041A	2 OF 3	B-5	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-296	11448-CBB-041A	2 OF 3	B-4	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-571	11448-CBB-041A	2 OF 3	C-7	MAN GATE	3	3	B		EV	C	24				
										O	24				
	CONTROL ROOM CHILLED WATER SYSTEM HEADER CROSS CONNECT ISOLATION VALVE														
1-VS-641	11448-CBB-041A	3 OF 3	D-6	CHECK VALVE	4	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CHILLED WATER SYSTEM PUMP DISCHARGE CHECK														
1-VS-645	11448-CBB-041A	3 OF 3	D-5	CHECK VALVE	4	3	C		CV	C	03				
										O	03				
	CONTROL ROOM CHILLED WATER SYSTEM PUMP DISCHARGE CHECK														
1-VS-672	11448-CBB-041A	3 OF 3	F-6	CHECK VALVE	4	3	C		CV	C	18	3			
										O	03				
	CONTROL ROOM CHILLED WATER SYSTEM DISCHARGE HEADER CHECK VALVE														
1-VS-MOV-100A	11448-CBB-006A	1 OF 2	C-4	MO BFLY	36	2	AE	CIV	LT	C	OPB				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTAINMENT PURGE SUPPLY, INSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-100B	11448-CBB-006A	1 OF 2	C-3	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE SUPPLY, OUTSIDE CONTAINMENT ISOLATION														
1-VS-MOV-100C	11448-CBB-006A	1 OF 2	D-4	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE EXHAUST, INSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-100D	11448-CBB-006A	1 OF 2	D-3	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE EXHAUST, OUTSIDE CONTAIN- MENT ISOLATION VALVE														
1-VS-MOV-101	11448-CBB-006A	1 OF 2	D-3	MO BFLY	8	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE BYPASS, OUTSIDE CONTAINMENT ISOLATION														
1-VS-MOV-102	11448-CBB-006A	1 OF 2	C-3	MO BFLY	18	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT VACUUM BREAKER														

4.5 VALVE TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements that are impractical for Surry Unit 1 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of code requirements is proposed.

RELIEF REQUEST V-1

System : Refer to Table V-1

Valve(s): Refer to Table V-1

Category: Refer to Table V-1

Class : Refer to Table V-1

Function: Refer to Table V-1

ISTC Code Requirements for Which Relief Is Requested

ISTC-5131 requires that the stroke time of active pneumatically operated valves shall be measured, a limiting value of full-stroke time specified by the owner, the valve stroke be measured to at least the nearest second, and any abnormality or erratic action be recorded and evaluated.

ISTC-5132 requires that measured stroke times be compared to the acceptance criteria in this section.

ISTC-5133 requires that corrective action be taken if the measured stroke times do not meet the acceptance criteria in ISTC-5122.

Basis for Relief (ISTC-5131, ISTC-5132 and ISTC-5133)

ISTC-1200(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves.

However, if these valves have a safety function to fail to an open or close position, then the testing requirements for power-operated valves are imposed. Code Case OMN-8 provides alternative rules for inservice testing of power-operated valves that are used for system control and have a fail safe safety function. Code Case OMN-8 is given below.

> Inquiry: What alternative requirements to those of ASME/ANSI OMa-1988, Part 10, para. 4.2 through OM Code-1995, ISTC 4.2 may be used for power-operated control valves that have only a fail safe safety function?

Reply: It is the opinion of the Committee that the requirements of ASME/ANSI OMa-1988, Part 10, para.4.2.1.4, Power-Operated Valve Stroke Testing; para. 4.2.1.8, Stroke Time Acceptance Criteria; and para. 4.2.1.9(b) need not be met. All other applicable requirements of para. 4.2 shall be met for ASME/ANSI OMa-1988, Part 10.

Further, the requirements of OM Code-1995, ISTC 4.2.4, Power-Operated Valve Stroke Testing; ISTC 4.2.8, Stroke Time Acceptance Criteria; and ISTC 4.2.9(b) need not be met. All other applicable requirements of the paragraph shall be met.

Any abnormality or erratic action experienced during valve exercising shall be recorded in the record of tests, and an evaluation shall be made regarding need for corrective action.

The power-operated control valves listed in Table V-1 have only a fail safe function. We propose applying the alternative rules described in Code Case OMN-8 to the control valves listed in Table V-1. This alternative to the requirements of ISTC-5131, ISTC-5132 and ISTC-5133 provides an acceptable level of quality and safety.

<u>Alternate Testing Proposed</u>

The control valves listed in Table V-1 will be tested to the requirements of Code Case OMN-8.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-5131, ISTC-5132 and ISTC-5133 identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

Table V-1

Valve Number	System	OM Category	ASME Class	Function
1-CC-LCV-101	Component Cooling	B	3	Charging Pump Seal Cooling Surge Tank Level Control Valve
1-CH-FCV-1113A	Chemical and Volume Control	B	3	Alternate Emergency Boration Line Flow Control Valve
1-CH-FCV-1114A	Chemical and Volume Control	B	3	Primary Grade Water Flow Control Valve
1-MS-RV-101A 1-MS-RV-101B 1-MS-RV-101C	Main Steam	B	2	Main Steam Header Discharge to Atmosphere Pressure Control Valves
1-SW-PCV-100A 1-SW-PCV-100B 1-SW-PCV-100C 1-SW-PCV-100D 1-SW-PCV-100E 1-SW-PCV-101A 1-SW-PCV-101B 1-SW-PCV-101C 1-SW-PCV-101D 1-SW-PCV-101E	Service Water	B	3	Control Room Condenser Water System Pressure Control Valves

Table V-1

Valve Number	System	OM Category	ASME Class	Function
1-SW-TCV-108A 1-SW-TCV-108B 1-SW-TCV-108C	Service Water	B	3	Service Water to Charging Pump Lube Oil Cooler Temperature Control Valves

RELIEF REQUEST V-2

System : Chemical and Volume Control and Safety Injection

Valve(s):		
	1-CH-MOV-1115B	1-SI-MOV-1885A
	1-CH-MOV-1115D	1-SI-MOV-1885B
	1-SI-25	1-SI-MOV-1885C
		1-SI-MOV-1885D

Category: A and A/C

Class : 2

Function: RWST Isolation Valves

ISTC Code Requirements for Which Relief Is Requested

ISTC-3630(f) requires that valves or valve combinations with leakage rates exceeding the values specified by the Owner shall be declared inoperable and either repaired or replaced.

Basis for Relief (ISTC-3630(f))

Valves 1-CH-MOV-1115B and D, and 1-SI-25 are in the supply line to the charging pumps from the RWST. Valves 1-SI-MOV-1885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

The RWST isolation valves work as a system of valves to protect the RWST from the contaminated sump water. Permissible valve leakage rates are based on each valve's possible contribution to the total allowable leakage rate to the RWST. When the leakages from each valve have been measured and summed, an individual valve's permissible leakage rate may have been exceeded but the overall allowable leakage to the RWST may not have been exceeded. In these cases, a repair or replacement may not be necessary because the system of isolation valves has been verified to be performing adequately.

In addition to repair or replacement as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate and hence the system function is satisfied. This evaluation should provide a high level of assurance that delaying the repair or replacement will not result in exceeding the overall limit before the next leak rate test. The evaluation should include a determination of the cause for the individual valve leakage. The evaluation should also address the effect of the degradation mechanism for the valve on the ability of the valve group to maintain overall leakage to the RWST below the overall allowable leakage rate during the subsequent 24 month interval. Evaluations will be documented and retained in plant records, and are available for subsequent review. This alternative to the requirements ISTC-3630(f) provides an acceptable level of quality and safety.

Alternate Testing Proposed

In addition to repair or replacement as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed and system leakage is projected to be maintained below the overall permissible leakage rate throughout the subsequent 24 month interval.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3630(f) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-3

System : Service Water

Valve(s): 1-SW-773
1-SW-778
1-SW-839
1-SW-840
1-VS-672

Category: C

Class : 3

Function: Control Room Condenser and Chilled Water System Discharge Check Valves

ISTC Code Requirements for Which Relief Is Requested

ISTC-3522(b) states that, "If exercising is not practicable during operation at power, it shall be performed during cold shutdowns."

ISTC-3522 (c) states that, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

ISTC-5221(c)(3) states that, "At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years." ISTC-5221(c)(3) requires that the disassembly and examination be performed during the refueling outage.

Introduction

As explained below, it is impractical to test check valves 1-SW-839 and 840 to the open position, and check valves 1-SW-773 and 778, and check valve 1-VS-672 to the close position every three months. While it is impractical to test every three months, the open and close positions can be verified while the plant is at power operation. The Code allows tests that are impractical to be performed every three months during power operation, to be performed during cold shutdown (ISTC-3522(b)) or reactor refueling (ISTC-3522(C)). In the case of disassembly, the Code allows disassembly to be performed during the refueling outage (ISTC-5221(c)(3)). The purpose of this relief request, is to allow the testing and disassembly to be performed on a reactor refueling frequency, but not during the refueling outage.

Background

The main control room and emergency switchgear rooms (MC/ESGR) system provides cooling for the main control room, the emergency switchgear rooms and the relay rooms. The MC/ESGR system is a common system for Unit 1 and Unit 2. The system consists of five trains of chillers (1-VS-E-4A, B, C, D and E) that provide chilled water to the air conditioning units located in the various rooms within the MC/ESGR envelope. The chiller units receive condenser water from the service water system. Surry Power Station originally had three chillers (1-VS-E-4A, B and C). Two more chillers (1-VS-E-4D and E) were added in 1994.

The design of the system calls for two chillers to be operating and two chillers to be available as backup when either unit is operating. This design allows for one chiller to be out of service for maintenance.

Check valves 1-SW-839 and 1-SW-773 are on the discharge piping of the condenser water pump (1-VS-P-1D) that services chiller 1-VS-E-4D, and check valves 1-SW-840 and 1-SW-778 are on the discharge piping of the condenser water pump (1-VS-P-1E) that services chiller 1-VS-E-4E. Check valve 1-VS-672 is on a chiller water discharge header that is common to chillers 1-VS-E-4D and E.

Basis for Relief from ISTC-3522(b) and (c) for 1-SW-773, 778 and 1-VS-672

ISTC-3510 requires in part that check valves shall be exercised nominally every three months, except as provided by ISTC-3520. ISTC-3522(b) and (c) which allow for testing at cold shutdown or reactor refueling if testing at power every three months is impractical. The discharge check valves 1-SW-773 and 778 are within the recirculation loops for the condenser water pumps 1-VS-P-1D and E. These valves can be full flow tested every three months. However, to test these valves to the close position requires that one train of the condenser water system be taken out of service and isolated, the downstream piping pressurized with an external source of water, the upstream piping drained, and leakage collected and measured at an upstream drain. It is estimated that it will take one crew 12 hours to setup and perform the back pressure leak test for each valve. Therefore, it is not practical to perform the close test every three months.

Check valve 1-VS-672 is on a chiller water discharge header that is common to chillers 1-VS-E-4D and E. To test this valve to the close position requires that both trains of the chilled water system be taken out of service and isolated, the downstream piping pressurized with an external source of water, the upstream piping drained, and leakage collected and measured at an upstream drain. Assuming that the D and E chilled water trains have been removed from service to test 1-SW-773 and 778, it is estimated that it will take one crew 8 hours to setup and perform the back pressure leak test for valve 1-VS-672.

The conclusion that the back pressure leak test is not practical for quarterly performance is consistent with NRC guidance in NUREG-1482 that pertains to similar leak testing of check valves tested in the Appendix J. NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

ISTC-3522(b) and (c) allow the test interval be deferred to cold shutdown or reactor refueling if testing at power every three months is impractical. Although the back pressure tests are labor intensive and time consuming to the point of being impractical for quarterly performance, they can be performed while the plant is at power. The best time to perform the back pressure tests is when chiller 1-VS-E-4D or E is taken out of service for maintenance. In the case of back pressure testing valve 1-VS-672, both chillers 1-VS-E-4D and E would be out of service which enters both units into a limiting condition of operation per Technical Specification 3.23.C.1.b.

As described above, the control room ventilation system is built with enough redundancy to allow for any chiller train to be removed from service during any operating mode. From a work planning standpoint, the worst time to schedule the removal of a chiller train from service for the purpose of valve testing is during a refueling outage. Most major work activities can only be performed during the refueling outage. These activities are carefully planned to maximize the availability of safety related equipment and to preserve plant safety margin. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety.

Justification for Disassembly and Examination for 1-SW-839 and 840

The discharge check valves 1-SW-839 and 840 are downstream from the recirculation loops for two of the five trains in the control room condenser water system. These two trains were added to the control room air conditioning system in 1994 and were designed to operate with a service water temperature of 95 ^{0}F. These two trains have such a large cooling capacity that one of the two trains can absorb the heating load of the entire control room air conditioning system. To maintain a high service water temperature, these trains must be operated with most of the service water flow diverted to the recirculation lines.

To achieve full design flow through the check valve, one train would have to be isolated and the flow of the other train diverted to the discharge check valve. If the flow was diverted to the discharge check valve, the service water temperature would drop and the condenser system would trip off line on low condenser suction pressure. Thus both trains would be out of service. Also, the control room air conditioning system heat load balance would be upset.

The Surry control room is common to both units. One of the two additional trains must be available for service while either Unit 1 or Unit 2 is operable. Therefore, performing the full flow test is not practical when either unit is operating. As an alternate test, these valves will be disassembled and examined.

Basis for Relief from ISTC-5221(c)(3) for 1-SW-839 and 840

The best time to disassemble these check valves is while the plant is operating and when chillers 1-VS-E-4D and E are taken out of service for maintenance. As described above, the worst time to schedule the removal of a chiller train from service for the purpose of valve testing is during a refueling outage. Disassembling the valves on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage.

Alternate Testing Proposed

The open positions for check valves 1-SW-773 and 778 will be verified with flow every three months, and the close positions will be verified by performing a back pressure leak test on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months. The close test will be performed while the plant is at power, instead of during cold shutdowns or reactor refuelings as required by ISTC-3522(b) and (c).

RELIEF REQUEST V-3 (Cont.)

The open position for check valve 1-VS-672 will be verified with flow every three months, and the close position will be verified by performing a back pressure leak test on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months. The close test will be performed while the plant is at power, instead of during cold shutdowns or reactor refuelings as required by ISTC-3522(b) and (c).

The open and close positions for check valves 1-SW-839 and 840 will be verified by disassembly and examination per the requirements of ISTC-5221(c) except that instead of performing the disassembly and examination during the fueling outage as required by ISTC-5221(c)(3), the disassembly and examination will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3522(b) and (c), and ISTC-5221(c)(3) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-4

System : Containment Spray

Valve(s): 1-CS-45

Category: C

Class : 2

Function: RWST Cooling System Isolation Check Valve

ISTC Code Requirements for Which Relief Is Requested

ISTC-5221(c)(3) - At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years.

Justification for Disassembly and Examination Test Frequency

This two inch check valve is on the refueling water refrigeration discharge piping that returns to the refueling water storage tank (RWST). To test the valve for closure, the cooling flow through the refrigeration units must be stopped, the valve isolated and the cooling system boundary breached. Restoring the RWST cooling system to operation after the system has been exposed to the atmosphere requires a lengthy venting process. During most of the year, the RWST cooling system runs continuously to maintain the RWST water temperature below 45oF per Technical Specification Section 3.4.A.3. Therefore, it is not practical to perform a quarterly closure test.

The valve is located about ten feet above the ground near the RWST and is very accessible. There are no vents or drains downstream of the valve. The upstream refrigeration units do have drains on the heat exchangers. However, RWST head would have to be used to supply the differential pressure across the check valve. This test configuration could provide a drainage path for the RWST if the check valve failed open and challenge the integrity of the RWST system. Considering the size of the valve (2"), it's accessibility and the problem of using RWST to perform a back pressure test, Surry Power Station has determined that the best method for verifying closure is to disassemble and examine the valve.

Basis for Relief (ISTC-5221(c)(3))

The disassembly and examination could be performed during refueling outages or while the plant is operating during cool weather when the need for RWST cooling is minimal. However, during the outage the RWST is involved in several major work and test activities that would be complicated by the disassembly and examination. For example, during the refueling operation water is pumped from the RWST to the reactor cavity via the low head safety injection (LHSI) pumps. The process is reversed when the new fuel is in place. Also, the RWST is used during the comprehensive pump tests for the LHSI pumps, the inside recirculation spray pumps, and the containment spray pumps. The RWST cooling system should be operable to support these work and test activities. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valve on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage.

Testing Frequency

The close position will be verified by disassembly and examination per the requirements of ISTC-5221(c) except that instead of performing the disassembly and examination during the fueling outage as required by ISTC-5221(c)(3), the disassembly and examination will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months. Normal operation of the RWST cooling system verifies that the valve opens.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-5221(c)(3) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-5

System : Chemical and Volume Control

Valve(s): 1-CH-225
1-CH-227
1-CH-229

Category: C

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valves

ISTC Code Requirements for Which Relief Is Requested

ISTC-3522(b) states that, "If exercising is not practicable during operation at power, it shall be performed during cold shutdowns."

ISTC-3522 (c) states that, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

Basis for Relief from ISTC-3522(b) and (c)

With the current piping configuration, the check valves cannot be back seat tested with flow. The valve bonnets are seal welded. The seal weld must be cut before the valve can be disassembled. Also, the lines contain a 7% boric acid solution. For these reasons disassembly is not the preferred method to verify the close position. The valves will be radiographed to verify that the disks are on the seat. Radiography creates a potential personnel hazard due to the use of a radioactive source. To reduce the number of times that test personnel are exposed to this hazard, the radiographs should be performed infrequently. Also, setup of the radioactive source, securing the area and performing the radiograph is a time consuming process that is impractical to perform every three months.

These valves are located in the auxiliary building basement at elevation 2 (1-CH-227 and 1-CH-229) and in the boric acid flats at elevation 13 (1-CH-225). Performing a radiograph requires that the surrounding area be cordoned off approximately two hours before the exposure, the area cleared of personnel, and access denied to personnel before and during the period of the exposure. The area must remain free of personnel from two to four hours depending on the success of the initial exposures. The restricted area for 1-CH-227 and 229 includes the auxiliary building basement. The restricted area for valve 1-CH-225 includes the boric acid flats and areas above the flats at elevation 27. Also, access to containment would be restricted.

Cold shutdown outages and reactor refueling outages are periods of high work activity. Outage work would be interrupted in a substantial portion of the auxiliary building during the preparation of the radiographs. Also, due to the increased number of workers on site during these outages, there is an increased risk of accidental exposure.
Alternate Testing Proposed for the Closed Position

The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdowns or reactor refuelings as required by ISTC-3522(b) and (c).

Testing Frequency

Check valves 1-CH-225, 227 and 229 will be full stroked exercised every quarter during normal operation when the reactor coolant boric acid concentration is above 100 ppm.

Valves 1-CH-227 and 229 are of the same manufacturer and model number, and are subject to similar service conditions. Valve 1-CH-227 is a two inch valve and valve 1-CH-229 is a one inch valve. These valves will be grouped together. To verify the close position, one valve will be radiographed each test interval. This sampling plan will follow the guidance described in NUREG-1482, Section 4.1.2. Valve 1-CH-225 is of a different manufacturer and will be radiographed every test interval to verify the close position. The close test will be performed while the plant is at power on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3522(b) and (c) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-6

System : Component Cooling

Valve(s): 1-CC-805

Category: C

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Makeup Valve

ISTC Code Requirements for Which Relief Is Requested

ISTC-3522(b) states that, "If exercising is not practicable during operation at power, it shall be performed during cold shutdowns."

ISTC-3522 (c) states that, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

Basis for Relief from ISTC-3522(b) and (c)

With the current piping configuration, the check valve cannot be back pressure tested with flow. There is no isolation valve upstream so a freeze seal is necessary to isolate the valve for disassembly. The preferred examination method is to radiograph the valve to verify that the disk is on the seat. Radiography creates a potential personnel hazard due to the use of a radioactive source. To reduce the number of times that test personnel are exposed to this hazard, the radiographs should be performed infrequently. Also, setup of the radioactive source, securing the area and performing the radiograph is a time consuming process that is impractical to perform every three months.

This valve is located in the auxiliary building basement at elevation 2. Performing a radiograph requires that the surrounding area be cordoned off approximately two hours before the exposure, the area cleared of personnel, and access denied to personnel before and during the period of the exposure. The area must remain free of personnel from two to four hours depending on the success of the initial exposures. The restricted area includes the auxiliary building basement.

Cold shutdown outages and reactor refueling outages are periods of high work activity. Outage work would be interrupted in a substantial portion of the auxiliary building during the preparation of the radiograph. Also, due to the increased number of workers on site during these outages, there is an increased risk of accidental exposure.

Alternate Testing Proposed for the Closed Position

The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c).

Testing Frequency

This valve will be tested to the full open position every reactor refueling. The close test will be performed while the plant is at power on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3522(b) and (c) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

ISTC-3521 and ISTC-3522 allow for the full stroke exercising of valves during Cold Shutdown (but not more frequently than every three months) if it is impractical to exercise the valves during normal operation. Therefore, no request for relief from testing every three months is necessary.

ISTC-9200 does require that the owner specifically identify these valves. The cold shutdown justifications identify and provide the technical basis for valves exercised during cold shutdown but not during normal operation.

COLD SHUTDOWN JUSTIFICATION CSV-1

System : Main Steam

Valve(s): 1-MS-TV-101A
1-MS-TV-101B
1-MS-TV-101C

Category: B

Class : 2

Function: Main Steam Line Trip Valves

Cold Shutdown Justification

Full stroke or part stroke exercising of these valves during power operation could result in a turbine and reactor trip.

Testing Frequency

These valves will be full stroke exercised every cold shutdown but not more frequently than once every three months.

> Note: The technical specification acceptance criteria are more limiting than the standard Code test criteria because the technical specification requires the measurement of elapsed time from the manual initiation of steam line isolation to initiation of main trip valve motion (must be less than or equal to 4.0 seconds) and the measurement of elapsed time from full open to full close (must be less than or equal to 5.0 seconds). If either of the limiting times is exceeded, the valve fails the test.
>
> The Code requires the measurement of elapsed time from initiation of steam line isolation to full valve closure, which is a less conservative test.

COLD SHUTDOWN JUSTIFICATION CSV-2

System : Component Cooling

Valve(s): 1-CC-TV-105A
1-CC-TV-105B
1-CC-TV-105C

Category: B

Class : 3

Function: Component Cooling Water Return from Reactor Coolant Pump Isolation Valves

Cold Shutdown Justification

Exercising valves 1-CC-TV-105A, B and C during normal operation would isolated the reactor coolant pump (RCP) component cooling water return headers. These headers collect cooling water from the RCP upper and lower bearing lube oil coolers, the shroud cooling coils and the stator coolers. Loss of cooling water to these pumps can be damaging, even for short periods of time. Therefore, the corresponding RCP must be secured before the header isolation trip valve is exercised. The valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

These valves will be full-stroke exercised to the close position every cold shutdown when the corresponding RCP is secured but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-3

System : Reactor Coolant

Valve(s): 1-RC-PCV-1455C
1-RC-PCV-1456

Category: BC

Class : 1

Function: Pressurizer Power Operated Relief Valves

Cold Shutdown Justification

These pressurizer power operated relief valves have shown a high probability of sticking open while being exercised during power operation. Also, these valves are not required for overpressure protection unless the primary system temperature is under 350 °F per Technical Specification Paragraph 3.1.G.1.c(4).

Testing Frequency

These valves will be tested on approach to Cold Shutdown.

COLD SHUTDOWN JUSTIFICATION CSV-4

System : Residual Heat Removal

Valve(s): 1-RH-5
1-RH-11

Category: C

Class : 2

Function: RHR Pump Discharge Check Valve

Cold Shutdown Justification

These valves can only be exercised to the open position and verified closed during the testing of RHR pumps 1-RH-P-1A and 1B (refer to Relief Request P-2). The low pressure pumps take suction from and discharge to the reactor coolant system that operates at 2235 psig. This pressure is well above the operating pressure of the pumps; therefore, testing during normal operation is not possible.

Testing Frequency

These valves will be tested to the full open position and the close position during the testing of the RHR pumps (refer to Relief Request P-2).

COLD SHUTDOWN JUSTIFICATION CSV-5

System : Chemical and Volume Control

Valve(s): 1-CH-MOV-1115C
1-CH-MOV-1115E

Category: B

Class : 2

Function: Charging Pump Suction from Volume Control Tanks

Cold Shutdown Justification

Partial or full stroke exercising these valves during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in Reactor Coolant System boron inventory, which would cause a plant transient.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-6

System : Chemical and Volume Control

Valve(s): 1-CH-MOV-1381

Category: A

Class : 2

Function: Reactor Coolant Pump Seal Water Return

Cold Shutdown Justification:

Closure of this valve with Reactor Coolant Pumps in operation will cause a loss of seal flow resulting in possible pump seal damage.

Testing Frequency

This valve will be tested to the close position every cold shutdown when the reactor coolant pumps are secured but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-7

System : Chemical and Volume Control

Valve(s):	1-CH-TV-1204A	1-CH-LCV-1460A
	1-CH-TV-1204B	1-CH-LCV-1460B

Category: A (1-CH-TV-1204A, B) and B (1-CH-LCV-1460A, B)

Class : 1 (1-CH-LCV-1460A, B) and 2 (1-CH-TV-1204A, B)

Function: Reactor Coolant System Letdown Isolation Trip and Level Control Valves

Cold Shutdown Justification

Exercising these valves during power operation interrupts letdown flow from the reactor coolant system (RCS) to the volume control tank. If the valves should fail closed, reactor coolant inventory control would be lost.

The pressurizer level control program controls reactor coolant inventory by regulating the operation of the charging flow control valve so that the charging input flow to the RCS and reactor coolant pump seal injection flow into the RCS matches letdown flow.

Also, exercising these valves during normal operation will interrupt letdown flow through the regenerative heat exchanger. This flow interruption would allow a slug of relatively cool charging water to thermal shock the nozzle connecting the 3" charging line to the 27" loop 2 cold leg injection line.

The valve controllers do not allow for a part stroke exercise test.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-8

System : Chemical and Volume Control

Valve(s): 1-CH-MOV-1289A
1-CH-MOV-1289B

Category: A (1-CH-MOV-1289A) and B (1-CH-MOV-1289B)

Class : 2

Function: Normal Charging Header Isolation

Cold Shutdown Justification

Failure of these valves in the close position during exercising would cause a loss of charging flow and could result in an inability to maintain reactor coolant inventory.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-9

System : Safety Injection

Valve(s): 1-SI-MOV-1890C

Category: A

Class : 2

Function: Low Head Safety Injection to Reactor Coolant System Cold Legs

<u>Cold Shutdown Justification</u>

In accordance with Technical Specification 3.3.A.8, during power operation, the A. C. power shall be removed from 1-SI-MOV-1890C with the valve in the open position. If this valve was stroked during power operation and failed in the close position, the Low Head Safety Injection System would be rendered inoperable.

<u>Testing Frequency</u>

This valve will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-10

System : Safety Injection

Valve(s): 1-SI-MOV-1867C
1-SI-MOV-1867D

Category: A

Class : 2

Function: High Head Safety Injection Isolation

Cold Shutdown Justification

These valves cannot be partial or full stroke exercised during power operation. Opening these valves would allow excess charging flow into the Reactor Coolant System causing a reactivity transient.

Testing Frequency

These valves will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-11

System : Chemical and Volume Control

Valve(s): 1-CH-MOV-1350

Category: B

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valve

Cold Shutdown Justification

Valve 1-CH-MOV-1350 can be full stroke exercised during normal operation when the boric acid concentration in the reactor coolant system is above 100 ppm. During power operation when the concentration of boric acid is low, the addition of boric acid will produce an undesirable transient in reactor power. Low concentrations of boric acid occur near the end of the fuel cycle. The valve controller does not allow for part stroke exercising.

Testing Frequency

Valve 1-CH-MOV-1350 will be full stroke exercised during normal operation when the reactor coolant boric acid concentration is above 100 ppm.

COLD SHUTDOWN JUSTIFICATION CSV-12

System : Steam Generator Blowdown

Valve(s):	1-BD-TV-100A	1-BD-TV-100D
	1-BD-TV-100B	1-BD-TV-100E
	1-BD-TV-100C	1-BD-TV-100F

Category: B

Class : 2

Function: Steam Generator Blowdown Isolation

Cold Shutdown Justification

Closing these valves during power operation causes the downstream piping to become empty due to drainage and water flashing to steam. When the valves reopen, a flow surge could occur which automatically isolates the inner valves due to high flow. Then a containment entry is necessary to reset these valves and upon reopening the process may occur again.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-13

System : Safety Injection

Valve(s): 1-SI-MOV-1842
1-SI-MOV-1869A
1-SI-MOV-1869B

Category: A

Class : 2

Function: High Head Safety Injection to reactor Coolant System

Cold Shutdown Justification

These valves cannot be partial or full stroke exercised during power operation. Opening these valves would allow excess charging flow into the Reactor Coolant System causing a reactivity transient and possible thermal shock to the High Head Safety Injection System.

Also, according to Technical Specification 3.3.A.9, A. C. power shall be removed with the valves in the close position during power operation.

Testing Frequency

These valves will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-14

System : Component Cooling

Valve(s): 1-CC-TV-120A 1-CC-TV-140A
1-CC-TV-120B 1-CC-TV-140B
1-CC-TV-120C

Category: B

Class : 3

Function: Component Cooling Return from Reactor Coolant Pump Thermal Barrier Isolation Valves

Cold Shutdown Justification

Exercising these valves during normal operation would isolate component cooling water to the reactor coolant pump thermal barriers. Cooling water must be available to the reactor coolant pump thermal barriers when the reactor coolant system temperature is above 200°F. Cold shutdown is entered when the reactor coolant system temperature drops below 200°F. The valve controllers do not allow for a part stroke exercise test.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-15

System : Feedwater

Valve(s): 1-FW-FCV-1478	1-FW-HCV-155A
1-FW-FCV-1488	1-FW-HCV-155B
1-FW-FCV-1498	1-FW-HCV-155C

Category: B

Class : NC

Function: Main Feedwater Regulating and Regulating Bypass Isolation Valves

Cold Shutdown Justification

These valves are in positions required to sustain power operation. Full stroke exercising the valves would result in a reactor trip. The main feedwater regulating valves 1-FW-FCV-1478, 1488 and 1498 move during normal operation as they perform their regulating function. In order to perform a partial stroke test during normal operation, the plant would have to reduce power to cause the valve disks to move. Reducing power for the purpose of performing an exercise test is considered impractical according to the NRC response to Comment 2.4.5-1 in NUREG-1482, Appendix G.

The bypass valves 1-FW-HCV-155A, B and C are used only during plant startup. During this startup period, their safety function is to close. During normal operation, these valves remain closed and are passive in the close position. Therefore, the bypass valves do not need to be partial stroke tested every three months.

Testing Frequency

These valves will be full stroke exercised every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-16

System : Component Cooling

Valve(s): 1-CC-LCV-101

Category: B

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Level Control Valve

Cold Shutdown Justification

This valve must open to maintain the level in the charging pump seal water surge tank and must close to prevent overflowing the surge tank and potentially draining the surge tank through the over flow line. The valve fails close on lose of operating air.

Valve position is determined solely from tank level. In order to manipulate the valve for testing, the surge tank must be isolated. However, the surge tank provides the NPSH for the charging pump cooling water pumps and it should not be isolated from the system during normal operation when component cooling water for the charging pumps is required.

Testing Frequency

This valve will be exercise to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-17

System : Reactor Coolant

Valve(s): 1-RC-SOV-100A-1
1-RC-SOV-100A-2
1-RC-SOV-100B-1
1-RC-SOV-100B-2

Category: B

Class : 1

Function: Head Vent for Reactor Vessel

Cold Shutdown Justification

These valves isolate the reactor vessel from containment atmosphere. Partial or full stroke exercising the valves during normal operation or during cold shutdowns where the reactor coolant system is pressurized could result in the release of uncontrolled contamination to containment.

Testing Frequency

These valves will be exercise to the open and close positions during cold shutdowns when the reactor coolant system is not pressurized but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-18

System : Safety Injection

Valve(s): 1-SI-MOV-1865A
1-SI-MOV-1865B
1-SI-MOV-1865C

Category: B

Class : 2

Function: Accumulator Discharge Isolation Valves to RCS Cold Leg

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.10, the accumulator discharge isolation valves 1-SI-MOV-1865A, B and C shall be blocked open by de-energizing the valve motor operators when the reactor coolant system pressure is greater than 1000 psig. These valves could be called upon to close when the reactor coolant system pressure is less than 1000 psig. If these valves were stroked during power operation and failed in the close position, the corresponding accumulator would be rendered inoperable and thus decrease plant safety. Also, the valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

These valves will be full stroke exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-19

System : Safety Injection

Valve(s): 1-SI-MOV-1890A
1-SI-MOV-1890B

Category: B

Class : 2

Function: Low Head Safety Injection Pump to Hot Leg Discharge Stop Valves

Cold Shutdown Justification

These stop valves have a double disk design and are closed during normal plant operation. They can be opened during the recirculation mode following an accident to periodically align the low head safety injection pump discharge with the reactor coolant system (RCS) hot legs. Therefore, they are called upon to open after the RCS is depressurized. During normal operation, downstream check valves in series separate the stop valves from the normal RCS pressure of 2235 psig.

According to AEOD Report T95-02, "Potential Damage to Low-Pressure Injection Valves During Surveillance Testing," valves with the same operating conditions, system configuration and disk design as the stop valves may be subject to loads that exceed the maximum design load of the valve if the valve is exercised at normal power. The maximum design load for the stop valves was determined for a depressurized RCS. However, if there is any leakage past the check valves during normal operation, the stop valves will experience the RCS pressure of 2235 psig on the downstream disk.

Full or partial-stroke exercising the stop valves at power and with RCS leakage to the downstream disk will produce a load that greatly exceeds the design load. Degradation from repeated surveillance testing could result in a situation where the valve may operate during testing, but could fail on a subsequent demand during an accident. To eliminate the concern of overloading the stop valves during surveillance testing, AEOD Report T95-02 recommends testing these valves "during refueling outages or other outages when the RCS pressure is low."

Testing Frequency

Because these stop valves fit the profile of valves subject to degradation as described above and in AEOD Report T95-02, the valves will be full stroke exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-20

System : Chemical and Volume Control

Valve(s): 1-CH-309

Category: C

Class : 2

Function: Normal Charging Isolation Check Valve

<u>Cold Shutdown Justification</u>

Closure test of 1-CH-309 cannot be performed during power operation because the test would interrupt the normal charging flow path.

<u>Testing Frequency</u>

This valve will be exercise to the close position every cold shutdown but not more frequently than once every three months. Normal operation of the charging system during power operation verifies that the valve opens.

COLD SHUTDOWN JUSTIFICATION CSV-21

System : Auxiliary Feedwater

Valve(s): 1-FW-27
1-FW-58
1-FW-89

Category: C

Class : 2

Function: Auxiliary Feedwater Header Check Valves at Main Feedwater Headers

Reactor Refueling Justification

Exercising these valves during power operation will introduce cold auxiliary feedwater to the steam generators resulting in thermal stress and possible steam generator tube degradation. Testing to the close position requires that the auxiliary feedwater path be isolated, the upstream piping vented, and leakage collected at a drain. It is impractical to perform both the open test and the close test during normal operation.

Testing Frequency

These valves will be exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

4.7 VALVE TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

ISTC-3521 and ISTC-3522 allow for the full stroke exercising of valves during reactor refueling (but not more frequently than every three months) if it is impractical to exercise the valves during normal operation or cold shutdown. Therefore, no request for relief from testing every three months is necessary.

However, ISTC-9200 does require that the owner specifically identify these valves. The reactor refueling justifications identify and provide the technical basis for valves exercised during reactor refueling outages.

REACTOR REFUELING JUSTIFICATION RRV-1

System : Chemical and Volume Control

Valve(s): 1-CH-258
1-CH-267
1-CH-276

Category: C

Class : 2

Function: Charging Pump Discharge Check Valve

Reactor Refueling Justification

With present plant design, these valves can only be partial stroke exercised during power operation because the charging pumps cannot achieve design accident flow when pumping into the Reactor Coolant System at operating pressure. The only available flow path to test these valves is into the reactor coolant system. During cold shutdown, stroke exercising these valves could result in an overpressurization of the Reactor Coolant System and could force a safety system to function.

Testing Frequency

These valves will be tested to the close position every three months and to the full flow tested each refueling.

REACTOR REFUELING JUSTIFICATION RRV-2

System : Safety Injection

Valve(s): Valves affected by this request are identified in Table RRV-2.

Category:

Class :

Function:

Reactor Refueling Justification

Valves 1-SI-46A, 46B, 50 and 58 cannot be full stroke exercised during plant power operation. The only full flow path is into the reactor coolant system and the low head safety injection pumps cannot overcome reactor coolant system operating pressure. During cold shutdown, the reactor coolant system pressure still prevents full flow testing of the check valve.

Testing valves 1-SI-50, 53, 58 and 61 to the close position requires isolating the suction lines to the low head safety injection pumps, venting on the upstream side of the valve being tested, starting the pump on the other path, checking for leakage and then repeating the process for the other valves. This test can take up to an hour to complete and places the unit into an LCO per Technical Specification 3.3 if performed during normal operation. Valves 1-SI-50 and 58 will be tested to the close position at the same test interval as the open test, which is every reactor refueling.

Due to the piping configuration, valves 1-SI-53 and 61 are normally back pressure tested with valves 1-SI-50 and 58. The valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a separate local back pressure leak test for these valves at a test interval that is different than the interval for valves 1-SI-50 and 58.

With the current piping configuration, valves 1-SI-46A and B cannot be back pressure tested with flow. They will be disassembled and examined on a sampling basis every reactor refueling.

Testing Frequency

Valves 1-SI-50, and 58 will be exercised to the full open and close positions every refueling. Valves 1-SI-53 and 61 will be exercised to the full open position every three months, and to the close position every refueling.

To verify the close position, valves 1-SI-46A and B will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c). The open position is verified during normal operation of the main feedwater system. These valves will be tested to the full open position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-2 (Cont.)
TABLE RRV-2

Valve	Category	Class	Function
1-SI-46A 1-SI-46B	C	2	Low Head Safety Injection Pump Suction from Refueling Water Storage Tank Check
1-SI-50 1-SI-58	C	2	Low Head Safety Injection Pump Discharge Check
1-SI-53 1-SI-61	C	2	Low Head Safety Injection Pump Recirculation Line Check

REACTOR REFUELING JUSTIFICATION RRV-3

System : Safety Injection

Valve(s): 1-SI-107 1-SI-109
1-SI-128 1-SI-130
1-SI-145 1-SI-147

Category: C

Class : 1

Function: Accumulator Discharge Check

Reactor Refueling Justification

These valves cannot be flow tested during normal operation because the accumulator pressure (600 to 650 psig) is below Reactor Coolant System pressure and the injection of borated water would upset the reactor coolant chemistry. During cold shutdown, the RCS pressure still prevents full flow testing.

To achieve full flow through the valves during reactor refueling, the accumulator would have to be discharged from an initial pressure of 600 psig. Discharging the accumulator from this pressure would stress the piping system and inject nitrogen into the RCS. Nitrogen in the RCS has been linked to gas binding of the RHR pumps. However, the accumulator can be discharged from a lower pressure during reactor refuelings when the RCS is depressurized. At this pressure, full flow conditions will not be established; however, enough flow will be developed to open the check valves to the full open position. This event can be verified and documented using non-intrusive diagnostic techniques.

Testing Frequency

With flow from each accumulator, these check valves will be acoustically monitored using a sampling plan for the disk opening to strike the back seat, and then closing to strike the valve seat every reactor refueling. The data will be analyzed to show that the disk struck the back seat and then the valve seat, which verifies that the disk stroked to the full open and close positions.

The sampling plan will follow the guidance described in NUREG-1482, Section 4.1.2. Valves 1-SI-109, 130 and 147 are closest to the reactor coolant system and are in one group and valves 1-SI-107, 128 and 145 are in the other group. During the initial testing using non-intrusive techniques, each valve in the group was verified as operable.

During subsequent testing, non-intrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. In this context, flow testing means that flow will be established in the lines but not measured. Indirect means can be used to verify that flow is established. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using non-intrusive techniques during the same outage. The test frequency is the same as described in ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-4

System : Safety Injection

Valve(s): Valves affected by this request are identified in Table RRV-4.

Category:

Class :

Function:

Reactor Refueling Justification

Open Test Discussion

The valves on the high head injection paths cannot be partial or full stroke exercised to the open position during power operation because flow through these valves would thermal shock the injection system and cause unnecessary plant transients. Flow cannot be established in the valves on the low head injection paths during power operation because the low head safety injection pumps do not develop sufficient head to overcome reactor coolant system pressure.

During cold shutdown, exercising the high head injection path valves with flow could cause a low temperature overpressurization of the reactor coolant system and force a safety system to function. Because of the large flow rate (3000 gpm) produced by the low head safety injection pumps, exercising the low head injection path valves during cold shutdowns when the reactor head is bolted in place presents the risk of filling the pressurizer and overflowing through a pressure operated relief valve into the pressurizer relief tank. Therefore, it is impractical to exercise the high or the low head injection path valves with flow quarterly or during cold shutdowns. The valves listed in Table RRV-4 are on the high and/or the low head injection paths.

Close Test Discussion for 1-SI-79, 82, 85, 241, 242 and 243

To individually verify closure for valves 1-SI-79, 82, 85, 241, 242 and 243, the piping must be vented upstream and a back pressure test performed. These valves are located inside the containment and would require a subatmospheric containment entry to perform the back pressure test if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

These valves are designated as pressure isolation valves. Technical Specification Table 4.1-2A requires that periodic leakage testing on each of these valves be accomplished prior to entering power operation condition after each time the plant is placed in the cold shutdown condition for refueling and after each time the plant is placed in cold shutdown condition for 72 hours if testing has not been accomplished in the proceeding 9 months.

According to ISTC-3522(d), " Valves exercised at shutdowns shall be exercised during each shutdown, except as specified in ISTC-3522(e). Such exercise is not required if the interval since the previous exercise is less than 3 months. During extended shutdowns, valves that are required to perform their intended function (See ISTA-1100) shall be exercised every 3 months, if practicable." ISTC-3522(e) states that "Valve exercising shall commence within 48 hr of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. For extended outages, testing need not be commenced in 48 hr if all valves required to be tested during cold shutdown will be tested before or as part of plant start up. However, it is not the intent of this Subsection to keep the plant in cold shutdown to complete cold shutdown testing."

However, if that first cold shutdown came more than nine months after the last test, Technical Specifications would require that the test be completed regardless of the delay to plant startup. In this respect, the Technical Specification frequency is more conservative than the IST Program required frequency. Also, a leakage test provides a better measure of the condition of the valve seats than does a standard back pressure test. When compared to the Code requirements for a back pressure test performed every cold shutdown, the combination of the Technical Specification required test frequency and leakage testing is an alternative that provides an acceptable level of quality and safety.

Close Test Discussion for 1-SI-88, 91, 94, 238, 239 and 240

Individual valve closure cannot be verified for valves 1-SI-88, 91, 94, 238, 239 and 240. There are no drains between the valve pairs 1-SI-88 and 1-SI-238, 1-SI-91 and 1-SI-239, and 1-SI-94 and 1-SI-240. To verify closure for each pair of valves, a subatmospheric containment entry must be made and a back pressure test performed if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

To back pressure test these valve pairs, the reactor coolant system is pressurized to approximately 300 psig, the piping upstream of the valves is drained and leakage at an upstream drain collected and measured. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.
To perform the back pressure test for the three valve pairs takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on these valves is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

<u>Close Test Discussion for 1-SI-235, 236 and 237</u>

To verify closure for valves 1-SI-235, 236 and 237, a subatmospheric containment entry must be made and a back pressure test performed if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

To back pressure test these valves, the reactor coolant system is pressurized to approximately 300 psig to maintain the downstream check valves 1-SI-79, 82 and 85 closed, a low head safety injection pump is started to pressurize the piping upstream of valves 1-SI-79, 82 and 85, and downstream of valves 1-SI-235, 236 and 237, the piping upstream of valves 1-SI-235, 236 and 237 is drained and leakage at an upstream drain collected and measured. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.

To perform the back pressure test for the three valves takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown which is consistent with NUREG-1482, Section 4.1.4 as discussed above.

Close Test Discussion for 1-SI-224, 225, 226, 227, 228 and 229

Valves 1-SI-224, 225, 226, 227, 228 and 229 need only to open to perform their safety function. No credit is taken for valves 1-SI-224, 225, 226, 227, 228 and 229 to close because the upstream and downstream valves provide isolation for the safety injection flow paths. For each of these valves, there are normally closed motor operated valves located upstream and two check valves in series located downstream. However, ISTC-5211(a) requires that "The necessary valve obturator movement during exercise testing shall be demonstrated by performing both an open and a close test." This requirement applies to check valves with a safety function in either one or both directions.

Back pressure testing these valves requires that the downstream piping be pressurized while the RCS is at approximately 300 psig, the upstream piping drained and leakage at an upstream drain collected and measured. To perform the back pressure test for the six valves takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown which is consistent with NUREG-1482, Section 4.1.4 as discussed above.

Testing Frequency

Testing Frequency to the Open Position

There is no installed instrumentation that can measure individual flow rates for valves 1-SI-79, 82, 85, 88, 91, 94, 238, 239, 240, 241, 242 and 243. Clamp on ultrasonic flow instrumentation will be used to verify full flow through the hot leg safety injection valves 1-SI-88, 91, 94, 238, 239 and 240 each reactor refueling.

With low head pump flow, the cold leg injection valves 1-SI-79, 82, 85, 241, 242 and 243 will be acoustically monitored using a sampling plan for the disk striking the back seat every reactor refueling. The data will be analyzed to show that the disk struck the back seat, which verifies that the disk stroked to the full open position.

The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2. The valves will be placed into two groups with valves 1-SI-79, 82 and 85 in one group, and valves 1-SI-241, 242 and 243 in the other group. During initial testing using nonintrusive techniques, each valve in the group will be nonintrusively verified as operable. During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

The remaining valves 1-SI-224, 225, 226, 227, 228, 229, 235, 236 and 237 will be full stroke exercised with flow every reactor refueling.

Testing Frequency to the Close Position

Valves 1-SI-79, 82, 85, 241, 242 and 243 will be tested to the close position per the requirements of Technical Specification Table 4.1-2A.

The valve pairs 1-SI-88 and 1-SI-238, and 1-SI-91 and 1-SI-239, and 1-SI-94 and 1-SI-240 will be tested for leakage to confirm that the valve pairs provide isolation for the three hot leg injection paths. The leakage tests will be performed every reactor refueling. Individual valve verification to the closed position is not possible with the current line configurations. Valves 1-SI-235, 236 and 237 will be tested for leakage to confirm that the valves are in the closed position. The leakage tests will be performed every reactor refueling.

The remaining valves 1-SI-224, 225, 226, 227, 228 and 229 will be tested to the close position every reactor refueling.

TABLE RRV-4

Valve	Category	Class	Function
1-SI-88, 91 1-SI-94, 238 1-SI-239, 240	C	1	Safety Injection to RCS Hot Legs
1-SI-235 1-SI-236 1-SI-237	C	1	High Head Safety Injection to RCS Cold Legs
1-SI-241 1-SI-242 1-SI-243	AC	1	Low Head Safety Injection to RCS Cold Legs
1-SI-224, 225 1-SI-226, 227	C	2	High Head Safety Injection Check Valve at Containment Penetrations
1-SI-228, 229	C	2	Low Head Safety Injection Check Valves at Containment Penetrations
1-SI-79, 82, 85	AC	1	Safety Injection to RCS Cold Legs

REACTOR REFUELING JUSTIFICATION RRV-5

System : RWST Cross Tie

Valve(s): 1-SI-25
1-SI-410

Category: C

Class : 2

Function: Charging Pump Suction from RWST Cross Tie

Reactor Refueling Justification

Exercising these valves during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in reactor coolant boron inventory.

Full flow for the charging system can only be established during reactor refueling when the RCS is depressurized.

Valve 1-SI-25 must close to preserve inventory from the Unit 2 RWST when the cross tie lines are opened. This valve is also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify performing a leak rate test. Due to the piping configuration upstream of valve 1-SI-410, the best method for verifying the close position is by disassembly and examination.

Testing Frequency

These valves will be full flow tested during every reactor refueling. Valve 1-SI-25 will be exercised to the close position every refueling outage. Valve 1-SI-410 will be disassembled and examined every reactor refueling to verify the close position.

REACTOR REFUELING JUSTIFICATION RRV-6

System : Various

Valve(s): Table RRV-6 identifies valves affected by this justification.

Category:

Class :

Function:

<u>Reactor Refueling Justification</u>

These check valves must seat upon reversal of flow in order to fulfill their safety functions. The only way to verify closure is to perform a local leak rate/back pressure test. Since the valves are located inside containment, they cannot be tested quarterly.

These valves are containment isolation valves and are subject to leak testing every reactor refueling outage per the requirements of the Appendix J leak testing program and OM Part 10, Paragraphs 4.2.2.3(e) and (f). The leak tests not only verify that the valves close adequately as does a normal back pressure test, but the tests also reveal the condition of the valve seating surfaces. As required by Paragraph 4.2.2.3(e), the leak tests include acceptance criteria for the maximum allowed leakage.

Performing a back pressure test every cold shutdown does not provide enough increase in safety to justify the burden of back pressure testing on a more frequent basis.

<u>Testing Frequency</u>

These valves will be exercised to the close position every reactor refueling. Valve 1-IA-939 is verified to open by the normal operation of the containment instrument air system. Normal operation of the radiation monitoring system during power operation verifies that valve 1-RM-3 opens. Valve 1-RC-160 isolates the primary grade (PG) water supply to the pressurizer relief tank (PRT). Following each outage, the PRT is normally filled with water supplied from the PG makeup system. Filling the PRT verifies that valve 1-RC-160 opens. Valve 1-SI-234 is on the nitrogen supply line to the SI accumulators. Charging of the SI accumulators during each refueling outage is adequate verification of the open position for valve 1-SI-234. The remaining valves 1-IA-938 and 1-VP-12 will be exercised to the open position every reactor refueling.

TABLE REACTOR RRV-6

Valve	Category	Class	Function
1-IA-938 1-IA-939	AC	2	Instrument Air Containment Isolation
1-RC-160	AC	2	Primary Grade Water to Pressurizer Relief Tank
1-RM-3	AC	2	Isolation on Radiation Monitor Return Line
1-SI-234	AC	2	Nitrogen Accumulators N_2 Supply
1-VP-12	AC	2	Condenser Air Removal Discharge to Containment

REACTOR REFUELING JUSTIFICATION RRV-7

System : Component Cooling

Valve(s): 1-CC-1105	1-CC-1188
1-CC-1106	1-CC-1189
1-CC-1107	1-CC-1190

Category: C

Class : 3

Function: Component Cooling Supply to RCP Thermal Barrier Isolation

Reactor Refueling Justification

These check valves must seat upon reversal of flow in order to fulfill their safety function to prevent gross leakage. For the following reasons, it is not practical to test the thermal barrier check valves quarterly or at cold shutdown:

1) the valves are inside a locked radiation area located inside containment; therefore, they are not accessible during normal operation,

2) the valves are inaccessible for about 24 hours after cold shutdown due to decontamination activities that must be performed before entry into the area,

3) the reactor cooling pump(s) may be running with the reactor cooling system temperature less than 200°F if an RHR loop is unavailable (in this case the valves and thus cooling to the thermal barriers would normally not be isolated) and

4) the valves have soft seats that are replaced every five years and using pressure to close and seat these valves on the more frequent cold shutdown frequency may accelerate the degradation of the soft seats.

These valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a local back pressure test.

Testing Frequency

Exercise to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pump thermal barriers.

REACTOR REFUELING JUSTIFICATION RRV-8

System : Chemical and Volume Control

Valve(s): 1-CH-230

Category: C

Class : 2

Function: Charging Pump Supply from VCT Discharge

Reactor Refueling Justification

This valve is on the discharge line of the volume control tank (VCT) that leads to the charging pump suction lines. Based on the piping configuration, the close position cannot be verified by normal system flow, but must be verified by performing a back pressure leak test. To perform the back pressure test, the VCT along with normal letdown, and the reactor coolant pump (RCP) seal water return line must be isolated. These systems cannot be isolated during normal plant operation.

Back pressure testing these valves requires that the VCT and the RCP seal water return line be isolated, the upstream piping vented, the downstream piping be pressurized, and the leakage past 1-CH-230 collected and measured. This back pressure test is performed in concert with the leak testing of the piping boundaries leading from the LHSI pumps to the charging pumps. It is estimated that it will take one crew an entire shift to perform the back pressure test for these boundaries. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4.

NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on this valve is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

Testing Frequency

This valve will be exercised to the full open position every three months and to the close position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-9

System : Component Cooling

Valve(s): 1-CC-176
1-CC-177

Category: C

Class : 3

Function: Component Cooling Water to RHR Heat Exchanger Check Valves

Reactor Refueling Justification

Check valves 1-CC-176 and 177 are located inside containment on two parallel headers. These valves must open to provide component cooling water to the "A" and "B" RHR heat exchangers and close to isolate the penetrations. A containment entry and manipulation of other system valves are necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation.

To perform a closure test during cold shutdown, one loop of the residual heat removal (RHR) system must be removed from service. Under normal cold shutdown conditions where the reactor coolant pumps are not running, one RHR loop may be inoperable for only two hours according to Technical Specification 3.1.A.1.d.1(a). Two hours is not enough time to perform the local back flow test. Also, the local back flow test requires that test equipment be installed just upstream and downstream of the valve, the piping upstream and downstream be isolated, and the cross connect path between the two CC trains opened. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

During normal operation, component cooling water is supplied to the containment penetration coolers through the "B" header, which feeds the "B" RHR heat exchanger. Adequate cooling of these penetrations demonstrates that valve 1-CC-176 moves to the partially open position. Header "B" is isolated downstream of the RHR heat exchanger by a manual valve located inside containment. A containment entry is necessary to open the isolation valve and to full flow valve 1-CC-176, which is impractical during normal operation.

The "A" RHR heat exchanger is not isolated during normal operation and flow can be established through valve 1-CC-177. The current full flow test procedure calls for the manipulation of a manual valve located inside containment, which is impractical during normal operation.

To achieve full flow through check valves 1-CC-176 and 177 during cold shutdowns, the CC flow normally has to be adjusted which may cause the reactor coolant system (RCS) temperature to decrease. This decrease in RCS temperature could challenge the RCS cool down limits described in Technical Specification Section 3.1.B. The full open tests will be performed during every reactor refueling instead of every cold shutdown because the small increase in safety gained by performing the testing during cold shutdowns does not justify exposing the plant to the risk of exceeding the RCS cool down limits.

Testing Frequency

Check valves 1-CC-176 and 177 will be exercised to the close and full open positions every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-10

System : Component Cooling

Valve(s): 1-CC-1
1-CC-58
1-CC-59

Category: C

Class : 3

Function: Component Cooling Water to Reactor Coolant Pump Coolers Check Valves

Reactor Refueling Justification

These check valves open to provide component cooling water to the reactor coolant pump coolers (a non-safety related function) and close to isolate the containment penetrations. A containment entry is necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation. Also, the local back flow test requires that the reactor coolant pump serviced by the component cooling water supply line be secured for at least 20 minutes, test equipment be installed just upstream and downstream of the valve and the piping upstream and downstream be isolated. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

Testing Frequency

These check valves will be exercised to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pumps.

REACTOR REFUELING JUSTIFICATION RRV-11

System : Component Cooling

Valve(s): 1-CC-224
1-CC-233
1-CC-242

Category: C

Class : 3

Function: Component Cooling Water to Reactor Containment Air Recirculation Coolers Check Valves

Reactor Refueling Justification

These check valves open to provide component cooling water to the reactor containment air recirculation coolers (a non-safety related function) and close to isolate the containment penetrations. A containment entry is necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation. Also, the local back flow test requires that test equipment be installed just upstream and downstream of the valve and the piping upstream and downstream be isolated. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

Testing Frequency

These check valves will be exercised to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor containment air recirculation coolers.

REACTOR REFUELING JUSTIFICATION RRV-12

System : Auxiliary Feedwater

Valve(s): 1-FW-1421-FW-272
1-FW-1571-FW-273
1-FW-1721-FW-309
1-FW-310

Category: C

Class : 3

Function: Auxiliary Feedwater Pump Discharge Check Valves and Cross Connect Check Valves

Reactor Refueling Justification

The check valves on the Unit 2 to Unit 1 auxiliary feedwater cross-connect line (Valves 1-FW-272, 273, 309 and 310) must open to allow Unit 2 auxiliary feedwater flow to Unit 1 in the event of a high energy line break in the Unit 1 main steam line valve house which could disable the three Unit 1 auxiliary feedwater pumps. To exercise these check valves to the full open position, auxiliary feedwater flow must be established to the steam generators. Doing so while both units are operating would introduce cold water from the emergency condensate storage tank into the hot steam generators resulting in thermal stress and possible steam generator tube degradation. Therefore, these valves cannot be exercised every three months.

To avoid thermal stressing the Unit 1 steam generators, Unit 1 must be shutdown and the Unit 2 auxiliary feedwater pumps used to inject the cold Unit 2 emergency condensate water into the relatively cool Unit 1 steam generators. To divert the Unit 2 auxiliary water flow to the cross-connect line, all of the Unit 2 motor operated isolation valves (2-FW-MOV-251A, B, C, D, E and F) must be closed. A probabilistic safety analysis (PSA) performed for this Unit 2 configuration showed that the closure of all of the Unit 2 auxiliary feedwater motor operated isolation valves significantly increased the risk of core damage to Unit 2. According the NUREG-1482, Section 3.1.1, "it would be appropriate to weigh the safety impact against the benefits of testing as a basis for deferring testing from quarterly to cold shutdowns or reactor refuelings." To reduce the exposure to risk for the operating unit, the full flow exercise testing of check valves 1-FW-272, 273, 309 and 310 will be limited to reactor refuelings.

To test valves 1-FW-272, 273, 309 and 310 to the close position requires that the upstream piping be vented and the downstream piping pressurized. The close test will be performed on the same test interval as the open test, which is every reactor refueling.

The auxiliary feedwater pump discharge check valves (1-FW-142, 157 and 172) must open to allow flow to the steam generators and close to preserve auxiliary water inventory. The valves can be full flow tested every three months using the full flow test loop. The closure test involves using flow from a running auxiliary feedwater pump to close and seat the discharge check valves of the other two non-running pumps. However, to pressurize the discharge lines of the non-running pumps, a flow path must be established to the steam generators. Again, doing so while both units are operating would introduce cold water from the emergency condensate storage tank into the hot steam generators resulting in thermal stress and possible steam generator tube degradation. Therefore, these valves cannot be closure tested every three months.

Back pressure testing the discharge check valves during a shutdown eliminates the problem of thermal stressing the steam generators. However, during shutdown the steam driven auxiliary feedwater pump is inoperable and during the back pressure test, only one auxiliary feedwater pump is available to service the operating unit. According to Technical Specification 3.6.B.1.b, the following shall be operable, "Two of the three auxiliary feedwater pumps on the opposite unit (automatic initiation instrumentation need not be operable), capable of being used with the opening of the cross-connect." A PSA performed for this Unit 1 configuration showed that by having only one auxiliary feedwater pump available, the risk of core damage to the operating unit is increased. Although this configuration is not as risk significant when compared to having all of the Unit 2 motor operated isolation valves closed, it still has a safety impact on the operating unit and should be avoided. To reduce the exposure to risk for the operating unit, these valves will be closure tested every reactor refueling.

Testing Frequency

The cross-connect check valves 1-FW-272, 273, 309 and 310 will be exercised to the full open and close positions every reactor refueling. The auxiliary feedwater pump discharge check valves 1-FW-142, 157 and 172 will be exercised to the full open position every three months and to the close position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-13

System : Feedwater

Valve(s): 1-FW-10
1-FW-41
1-FW-72

Category: C

Class : 2

Function: Main Feedwater check valves at Containment Penetrations.

Reactor Refueling Justification

Closure of these valves during power operation would require securing feedwater, which would result in reactor trip. Cold shutdown testing of valves using flow to verify closure is inconclusive due to the inability to establish adequate differential pressure across the valve disc.

A test was conducted in an effort to verify whether closure of these valves can be determined using flow. Because there is no isolation boundary between the steam generators and the valves, the test volume must include the steam generators. A steam generator was pressurized with a nitrogen blanket to approximately 5 psig. The 0.75 inch drain valve just upstream of the check valve was opened and flow was observed. The 14 inch check valve did not stop the back flow through the vent. It was concluded that the flow was inadequate to seat the check valve completely. Just a small gap between the disc and the seat was sufficient to create a flow area equal to or greater than the flow area through the drain. Therefore, the pressure differential associated with the back flow is being created across the drain valve and not the disc of the check valve.

The above test proved to be inconclusive because of the inability to establish a sufficient differential pressure across the disc. The only way to increase the differential pressure is to increase the flow area from the test volume. However, this is not achievable for the existing configuration. Immediately upstream of the drain valve is another 14 inch check valve, so the only available flow area from the test volume is the drain valve.

Testing Frequency

To verify the close position, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c). The open position is verified during normal operation of the main feedwater system.

REACTOR REFUELING JUSTIFICATION RRV-14

System : Safety Injection

Valve(s): 1-SI-47
1-SI-56

Category: C

Class : 2

Function: Low Head Safety Injection Pump Suction from Containment Sump Check Valve

Reactor Refueling Justification

To partial or full flow test these valves requires taking suction from the reactor containment sump, which contains untreated water. This water should not be introduced into the system.

Testing Frequency

To verify the open and close positions, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-15

System : FW

Valve(s) : 1-FW-144 1-FW-159 1-FW-174
1-FW-148 1-FW-163 1-FW-178

Category : C

Class : 3

Function : Auxiliary Feedwater Pump Recirc Line and Pump Oil Cooler Check Valves

Reactor Refueling Justification

These check valves cannot be flow tested because instrumentation is not installed to measure flow or differential pressure. There is no other indirect means to verify full flow for these valves with the current configuration.

Testing Frequency

To verify the open and close positions, valves 1-FW-144, 159, and 174 will be grouped together; valves 1-FW-148, 163, and 178 will be grouped together, and one valve from each group will be disassembled and examined every reactor refueling. A different valve from each group will be disassembled for each examination. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-16

System : MS

Valve(s) : 1-MS-176
1-MS-178
1-MS-182

Category : C

Class : 2

Function : Main Steam Header Supply Check Valves To Turbine Driven Auxiliary Feedwater Pump

Reactor Refueling Justification

These check valves cannot be back pressure tested with flow during normal operation because this test would require the venting of process steam while verifying the close position. Venting of process steam would endanger the test personnel.

Testing Frequency

To verify the close position, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled for each examination. This test frequency is in accordance with ISTC-5221(c). The valves will be full flow tested every three months.

REACTOR REFUELING JUSTIFICATION RRV-17

System : Containment Spray

Valve(s): 1-CS-105 1-CS-13 1-RS-11
1-CS-127 1-CS-24 1-RS-17

Category: AC (1-CS-13, 24 and 1-RS-11,17) and C (1-CS-105,127)

Class : 2

Function: Containment Spray Pump Discharge Check Valves

Reactor Refueling Justification

These check valves cannot be exercised with flow during normal operation because this test would introduce containment spray to containment. These valves cannot be locally exercised during normal operation because they are located inside containment.

These valves are located upstream of the spray nozzles. For valves 1-CS-13 and 24, and 1-RS-11 and 17, the only way to perform a close test is to install a blank flange downstream and locally perform a close test using air. The small increase in safety gained by performing this test every cold shutdown does not justify the burden of installing the blank flange and locally back pressure testing the valves at the increased cold shutdown test frequency.

There are no blank flanges installed downstream for valves 1-CS-105 and 127. Therefore, a back pressure test cannot be performed on these valves with the current piping configuration. These valves have no external lever arms. The only means to exercise valves 1-CS-105 and 127 to the open and close positions is by disassembly.

Valves 1-CS-13 and 24, and 1-RS-11 and 17 do have weight-loaded lever arms, however, the weight position and lever arm angle are subject to adjustment to ensure that the valves open when a pressure differential using air is applied every 18 months as required by T. S. 4.5.C. Therefore, torque measurements would not be repeatable.

Testing Frequency

For testing to the open and close positions, valves 1-CS-105 and 127 will be grouped together and one valve from the group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

For testing to the open and close positions, valves 1-CS-13 and 24 will be grouped together; and valves 1-RS-11 and 17 will be grouped together and one valve from each group will be disassembled and examined every reactor refueling. A different valve from each group will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-18

System : Residual Heat Removal

Valve(s): 1-RH-MOV-1700
1-RH-MOV-1701
1-RH-MOV-1720A
1-RH-MOV-1720B

Category: B

Class : 1

Function: RHR Supply and Return Isolation Valves

Reactor Refueling Justification

These valves are interlocked with Reactor Coolant System pressure such that the valves cannot be opened at elevated reactor coolant system pressure. Overpressurization of the suction line may cause a LOCA. The interlocks cannot be bypassed with normal control circuits. Therefore, the valves cannot be full or part-stroke exercised during power operation. Also, the valve controllers do not allow for a part-stroke exercise test.

The RHR suction valves 1-RH-MOV-1700 and 1701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled.

The RHR return isolation valves 1-RH-MOV-1720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals.

Testing Frequency

These valves will be full stroke exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-19

System : Auxiliary Feedwater

Valve(s): 1-FW-131
1-FW-133
1-FW-136
1-FW-138

Category: C

Class : 2

Function: Auxiliary Feedwater Header Check Valves at Containment Penetrations

<u>Reactor Refueling Justification</u>

Exercising these valves during power operation will introduce cold auxiliary feedwater to the steam generators resulting in thermal stress and possible steam generator tube degradation.

Back pressure testing these valves requires that the auxiliary feedwater headers be isolated, the upstream piping vented and the downstream piping be pressurized. It is estimated that it will take one crew an entire shift to perform the back pressure test for these valves. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on these valves is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

Testing Frequency

These valves will be exercised to the open and closed positions every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-20

System : Chemical and Volume Control

Valve(s): 1-CH-225
1-CH-227
1-CH-229

Category: C

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valves

Reactor Refueling Justification

To achieve full flow through check valves 1-CH-225, 227 and 229, the boric acid transfer pumps must be set at high speed, which could inject enough boric acid into the reactor coolant system to cause a reactor power transient if the concentration of boric acid in the reactor coolant system is low. Low concentrations of boric acid occur near the end of the fuel cycle. If the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.

Testing Frequency

Check valves 1-CH-225, 227 and 229 will be full stroked exercised every quarter during normal operation when the reactor coolant boric acid concentration is above 100 ppm. If the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.

REACTOR REFUELING JUSTIFICATION RRV-21

System : Component Cooling

Valve(s): 1-CC-805

Category: C

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Makeup Valve

Reactor Refueling Justification

This valve must open to provide a flow path from the component cooling water system to the charging pump seal water surge tank as a supply of makeup water to the surge tank. There is no flow instrumentation to verify partial or full flow for the check valve.

There is level instrumentation on the surge tank. The surge tank can be isolated, drained down and refilled. However, the surge tank provides the NPSH for the charging pump cooling water pumps and it should not be isolated from the system during normal operation when component cooling water for the charging pumps is required.

Testing Frequency

This valve will be tested to the full open position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-22

System : Service Water

Valve(s): 1-SW-262
1-SW-268

Category: C

Class : 3

Function: Service Water Pump to Charging Pump Discharge Check Valves

Reactor Refueling Justification

These check valves can be seated by pressure from the running pump in parallel with the non-running pump. However, there are check valves located upstream of 1-SW-262 and 268, and there are no vents or drains located between the check valves in series to collect leakage or to connect a pressure gauge. Therefore, with the current piping configuration, the check valves cannot be verified to close with flow. They will be disassembled and examined.

Testing Frequency

For testing to the close positions, valves 1-SW-262 and 268 will be grouped together; and one valve from the group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-23

System : Service Water

Valve(s):	1-SW-MOV-103A	1-SW-MOV-104C
	1-SW-MOV-103B	1-SW-MOV-104D
	1-SW-MOV-103C	1-SW-MOV-105A
	1-SW-MOV-103D	1-SW-MOV-105B
	1-SW-MOV-104A	1-SW-MOV-105C
	1-SW-MOV-104B	1-SW-MOV-105D

Category: B

Class : 3

Function: Recirculation Spray Heat Exchanger Isolation Valves

<u>Reactor Refueling Justification</u>

The recirculation spray heat exchangers are designed to transfer heat from the containment recirculation spray system to the service water system. Four heat exchangers (1-RS-E-1A, B, C and D) are installed in the Unit 1 containment. Each heat exchanger has a service water supply line with a 24" motor operated isolation valve (1-SW-MOV-104A, B, C and D), and a service water return line with a 24" motor operated isolation valve (1-SW-MOV-105A, B, C and D). The supply lines are fed by two service water headers, each having two 30" motor operated isolation valves in parallel (1-SW-MOV-103A and B, and 1-SW-MOV-103C and D). One header feeds heat exchangers 1-RS-E-1A and 1D, and the other header feeds heat exchangers 1-RS-E-1B and 1C. All of the isolation valves are butterfly valves and are normally closed with the heat exchangers maintained in a dry (drained) condition. Upon initiation of containment recirculation spray, these valves automatically open.

The service water supply and return line isolation valves provide the second containment isolation boundary for the recirculation spray heat exchangers. Each heat exchanger loop is considered a closed system within the containment. Therefore, although the isolation valves are designated as containment isolation valves in UFSAR Table 5.2-1, they are not subject to Appendix J leak testing. However, each heat exchanger train is subject to leak testing whenever the system membrane is breached, which normally occurs during maintenance on the system during refueling outages.

These large butterfly valves have rubber seats to ensure a leak tight seating surface. An investigation of valve leakage events related to this type of valve revealed that a leakage cause was degraded seats. Foreign material was found in the seats that could cause cutting of the soft seat surface when the valves are exercised. This foreign material is transported to the valve by the normal operation of the circulating water system and the service water system. Frequent exercising of the valves presents more opportunities for this type of seat damage to occur. To reduce damage to the valve seats, the exercise test will be deferred from every three months to every reactor refueling.

The 30" header isolation butterfly valves also have a boundary leakage function. The source of service water for Surry Power Station is the James River. The water in the James River is brackish, and is rich in sediments and marine organisms. This raw water must not leak by the header and supply line isolation valves because the sediment and marine growth would foul the heat exchangers. The 30" header isolation butterfly valves prevent the river water from filling the service water header and supply lines up to valves 1-SW-MOV-104A, B, C and D. The service water headers up to the 24" supply line branches are filled with chemically treated water and maintained in a wet lay up condition during normal operation to reduce biological fouling, to reduce the initial flow through the heat exchangers and thus reduce the amount of marine growth torn off the pipe walls, and to reduce air entrapment in the heat exchangers.

There have been times when the 30" valves have leaked to the point that the headers had to be drained to prevent service water from reaching the 104 valves. The 30" valves have rubber seats to ensure a leak tight seating surface. As with the 24" butterfly valves, exercising the 30" valves presents more opportunities for seat damage to occur. To reduce damage to the valve seats, the exercise test will be deferred from every three months to every reactor refueling.

A review of stroke time data collected over a10 year period revealed that there were no stroke time test failures for any of the twelve valves. Therefore, these valves have proven to be highly reliable, and based on good performance the test interval of every reactor refueling will be adequate to maintain this reliability.

Testing Frequency

These valves will be exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-24

System : Main Steam System

Valve(s): 1-MS-RV-101A
1-MS-RV-101B
1-MS-RV-101C

Category: B

Class : 2

Function: Main Steam Header Discharge to Atmosphere Pressure Control Valves

<u>Reactor Refueling Justification</u>

These valves are located above the main steam lines on the top floor of the main steam valve house. The top floor of the main steam valve house is exposed to heat loads from the main steam lines and is a high temperature environment, particularly in the summer time.

If the plant is at power, upstream isolation valves must be closed manually. Then the valves must be stroked and observed locally when performing the fail-safe test. Given the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel. To reduce the number of times that the test personnel are exposed to this hazard, the valves will be tested every refueling outage. It is important that the valves be tested when the valve body is at operating temperature to ensure that the actuator assembly functions properly. The main steam system operates at a nominal temperature of 555°F. Therefore, the exercise test will be performed either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

The issue of testing as the plant exits the refueling outage is addressed in NUREG-1482, Section 3.1.1.2. This section states in part that,

> "OM-10 requires that valves tested on a reactor refueling outage frequency be tested prior to returning the plant to operation. Several licensees have indicated that certain valves cannot be tested until power ascension begins. This section was included to give guidance for such valves and to indicate that the operability of technical specifications would control the time for testing such valves. It is intended that such valves will be indicated in the IST program as tested on a refueling outage

frequency, even though the plant may return to 'operation' before testing is completed."

Testing these valves as the plant exits the refueling outage complies with the guidance given in NUREG-1482, Section 3.1.1.2.

Testing Frequency

These valves will be exercised closed every reactor refueling either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

4.8 ALTERNATIVE TESTING FOR NON-CODE VALVES

According to the minutes of public meeting on Generic Letter 89-04, "Paragraph (g) of 10CFR 50.55a requires the use of Section XI of the ASME Code for inservice testing of components covered by the Code. For other components important to safety, the licensee also has the burden of demonstrating their continued operability." The minutes go on to state that, "The Code-required IST program is a reasonable vehicle to provide a periodic demonstration of the operability of pumps and valves not covered by the Code. If non-Code components are included in the ASME Code IST program (or some other licensee-developed inservice testing program) and certain Code provisions cannot be met, the Commission regulations (10 CFR 50.55a) do not require a 'request for relief' to be submitted to the staff. Nevertheless, documentation that provides assurance of the continued operability of the non-Code components through the performed tests should be available at the plant site." Non-Code components are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

Surry Power Station has elected to include certain non-Code components in the ASME IST program. Where the Code provisions are not met for non-Code components, alternative testing is performed that is adequate to ensure continued operability. The alternate testing is described in this section. There may be other deviations from Code provisions that are not described in this section. For these cases, documentation is available at the plant site.

As indicated in the minutes of public meeting on Generic Letter 89-04, a 'request for relief' need not be submitted for non-Code components. Therefore, the alternative tests described in this section are not 'requests for relief' but are provided for information.

NON-CODE ALTERNATIVE TESTING VNC-1

System : Instrument Air

Valve(s):	1-IA-928	1-IA-949
	1-IA-947	1-IA-952
	1-IA-948	1-IA-953

Category: C

Class : NC

Function: Bottled Air System Supply/Isolation

<u>ISTC Code Requirements Which Will Not Be Met</u>

Exercise valves every three months.

<u>Basis for Alternate Testing</u>

Valves 1-IA-928, 947 and 952 must close to ensure that bottled air is available to actuate the main valves (1-RC-PCV-1455C, 1-RC-PCV-1456, and 1-MS-SOV-102A and B). Valves 1-IA-948, 949 and 953 must open to allow bottled air to reach the main valves. There is no direct means to measure the flow of air through the check valves.

However, after the instrument air system is isolated and the lines vented, the stroke times of the main valves are measured and compared to acceptance criteria. Measuring the stroke times provides indirect evidence that valves 1-IA-948, 949 and 953 open properly and that valves 1-IA-928, 947 and 952 close properly.

The performance of this test renders the main valves inoperable; therefore, the tests cannot be performed during normal operation. After stroking the main valves with the air bottles, the air bottles must be replaced. The safety gained in testing the valves every cold shutdown versus every reactor refueling does not justify the burden of replacing the air bottles on the more frequent basis.

Alternate Testing

Valves 1-IA-928, 947 and 952 will be tested closed and valves 1-IA-948, 949 and 953 will be tested open by isolating and venting the instrument air lines, and then stroking the main valves with the bottled air. The stroke times of the main valves will be measured and compared to acceptance criteria. This test will be performed every reactor refueling.

Valves 1-IA-928, 947 and 952 will be tested open and valves 1-IA-948, 949 and 953 will be tested close by stroking the main valves with normal instrument air. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling.

NON-CODE ALTERNATIVE TESTING VNC-2

System : Emergency Generator

Valve(s):		
Valve(s):	1-EG-43	3-EG-43
	1-EG-44	3-EG-44
	1-EG-45	3-EG-45
	1-EG-46	3-EG-46
	1-EG-SOV-100A	3-EG-SOV-300A
	1-EG-SOV-100B	3-EG-SOV-300B

Category: B (1/3-EG-43,44, 1/3-EG-SOV-1/300A and B)
C (1/3-EG-45,46)

Class : NC

Function: 1/3-EG-43,44 EDG Starting Air/Drive Air Control/Relay Valves
1/3-EG-45,46 EDG Air Start Pressure Equalizing Check Valves
1/3-EG-SOV-1/300A and B Air Start System Solenoid Valves

ISTC Code Requirements Which Will Not Be Met

For valves 1/3-EG-43,44, and 1/3-EG-SOV-1/300A, B, measure stroke time.

For valves 1/3-EG-45,46, measure flow to verify full open

Basis for Alternate Testing

Valves 1/3-EG-43 and 44 are air pilot valves that open to supply drive air to the EDG air starting motors. These valves along with the air start solenoid valves 1/3-EG-SOV-1/300A and B have actuation times considerably under a second and there is no visual reference on the valve to observe the stroke; therefore, the stroke time cannot be measured.

Valves 1/3-EG-45 and 46 are check valves that close to prevent opening the air start valves before the air motor pinion gears are fully engaged. They open to ensure that the air motor pinions remain engaged (hold-in feature) when the air motors are operating. The only indication of the proper operation of the check valves is the proper operation of the pinion gears. The air pilot valves and the check valves work in concert with the air start solenoid valves to start the emergency diesels upon demand within the required time.

Alternate Testing

These valves will be stroke tested quarterly by observing that the valves perform their intended function, which is to start the diesel engines. Adequate performance of the valves will be verified by recording the time it takes for the diesel engines to reach a predetermined RPM and comparing the time to an acceptance criterion.

Also, the failure of these valves to perform will promptly give a diesel engine trouble alarm. Further investigation would identify problems with the operability of these valves.

NON-CODE ALTERNATIVE TESTING VNC-3

System : EE

Valve(s): 1-EE-SOV-100 1-EE-SOV-104
1-EE-SOV-101 1-EE-SOV-105

Category: B

Class : NC

Function: Diesel Fuel Oil Pump Discharge Valves

ISTC Code Requirements Which Will Not Be Met

Measure stroke time.

Basis for Alternate Testing

These valves are small (1"), fast acting solenoid operated gate valves with no position indication lights and no local visual means of determining stroke time. Valve operability can only be indirectly observed by verifying system operability.

Also, these valves are interlocked with the pumps to open and close upon pump startup and shutdown.

Alternate Testing

These solenoid valves will be stroke tested quarterly by observing that the solenoid valves perform their intended function (fuel oil is flowing to the day tank after the solenoid valve has been opened).

NON-CODE ALTERNATIVE TESTING VNC-4

System : Main Steam

Valve(s): 1-MS-NRV-101A
1-MS-NRV-101B
1-MS-NRV-101C

Category: C

Class : NC

Function: Main Steam Non-Return Valves

<u>ISTC Code Requirements Which Will Not Be Met</u>

ISTC-5221(a)(3) says that observations to verify check valve function can be by other positive means such as nonintrusive testing results. This test method is applied to each valve within the test intervals described in ISTC-3522.

<u>Reactor Refueling Justification</u>

<u>Valve Description</u>

The main steam non-return valves (NRVs) at Surry Power Station are located in the main steam valve house and are a globe type stop check design. The valves measure approximately 16 feet from the bottom of the valve body to the top of the hand wheel and weigh almost 18,000 lbs. The disk is welded to a hollow piston and the whole assembly is free to move about 25 vertical inches within the valve body cylinder. The disk measures 25.5 inches across and the disk and piston assembly weighs approximately 1,200 lbs. When the main steam system is not in service, a motor operator is used to run the valve stem down onto the disk to secure the main steam line.

The valves open to allow steam to the turbine. For accident conditions, the non-return valves in conjunction with the main steam trip valves prevent the blowdown of more than one steam generator for any break location, even if one valve fails to close. For example, for a break upstream of the trip valve in one line, the closure of either the non-return valve in that line or the trip valves in the other lines prevents the blowdown of the other steam generators.

Method of Testing

The piping downstream of each non-return valve leads to a common distribution manifold and cannot be isolated. Therefore, performing a back pressure test using flow is not practical. Also, valve disassembly and examination are not practical alternatives due to the size of the valve and the weight of the disk.

However, an alternative exists to verify that the disk moved to the valve seat during reactor coolant system (RCS) cool down. When the RCS temperature is between 350°F and 195°F during the cool down process, the main steam trip valves are closed. Then the main steam non-return valves close in response to the loss of steam flow.

After the main steam trip valve is closed, diagnostic test equipment can be used to determine the position of the disk of the NRV. After the main steam flow is stopped, the non-return valve stem is run down onto the disk after the disk returns to the seat. A change in the running force within the normal travel of the stem indicates a resistance to stem movement (i.e., a stuck disk). Verifying that the stem travels to the seated disk with nominal changes in the running force indicates that the disk is on the seat. The test requires that the cool down process be delayed between one to two hours to setup the instrumentation and to perform the test on each of three valves.

The diagnostic test equipment provides two methods for detecting changes in the running force. The test can be performed either at the valve by monitoring the yoke strain using a permanently mounted force sensor or at the motor control center (MCC) by monitoring motor current. The first method converts yoke strain directly to stem load. A signature is generated that will show any changes in the stem load which would indicate a stuck or binding valve disk. The second and more sensitive method monitors a single phase of the motor current. The motor current information is used to generate motor power and power factor signatures that are very sensitive to changes in stem load. Changes in motor load would again indicate a stuck or binding valve disk. In both methods, the valve switch probes are monitored to determine the status of the torque and limit switches, and the open and close bypass switches in the motor operator control circuit over the course of stem travel. The second method is preferred.

Testing Frequency Discussion

Full stroke or part stroke exercising of these valves during power operation would result in a turbine and reactor trip. Since September, 1993, diagnostic test equipment has been used to verify that the disk traveled to the full close position during the plant cool down period going into planned cold shutdowns. No binding of the disk has been detected during these tests. The test results are expected because the piston-disk assembly is not attached to any other internal part, the 1,200 lb piston-disk assembly is maintained parallel within the valve body cylinder and the main steam system is very clean. Consequently, there is no mechanism to prevent the disk from dropping from the full open position to the valve seat.

Basis for Alternate Testing

Based on the history of good valve performance, a design that is very reliable and the burden of performing the diagnostic test measurements every planned cold shutdown, the test interval will be extended to each reactor refueling outage and a sampling plan applied to the use of the diagnostic test equipment. The sampling plan will consist of testing one valve each reactor refueling with the diagnostic test equipment on a rotating basis.

Alternate Testing

The diagnostic test described above will be performed on one main steam non-return valve during each reactor refueling outage. The tests will be conducted on a rotating basis for each of the three valves during subsequent refueling outages. If the diagnostic test results indicate binding of the disk, the other two valves will be tested with the diagnostic test equipment. The open position is verified by the normal operation of the main steam system.

RELIEF REQUEST VNC-5

System : Refer to Table VNC-5

Valve(s): Refer to Table VNC-5

Category: Refer to Table VNC-5

Class : Refer to Table VNC-5

Function: Refer to Table VNC-5

ISTC Code Requirements Which Will Not Be Met

ISTC-5131 requires that the stroke time of active pneumatically operated valves shall be measured, a limiting value of full-stroke time specified by the owner, the valve stroke be measured to at least the nearest second, and any abnormality or erratic action be recorded and evaluated.

ISTC-5132 requires that measured stroke times be compared to the acceptance criteria in this section.

ISTC-5133 requires that corrective action be taken if the measured stroke times do not meet the acceptance criteria in ISTC-5122.

Basis for Alternate Testing

ISTC-1200(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves.

However, if these valves have a safety function to fail to an open of close position, then the testing requirements for power-operated valves are imposed. Code Case OMN-8 provides alternative rules for inservice testing of power-operated valves that are used for system control and have a fail safe safety function. Code Case OMN-8 is given below.

> Inquiry: What alternative requirements to those of ASME/ANSI OMa-1988, Part 10, para. 4.2 through OM Code-1995, ISTC 4.2 may be used for power-operated control valves that have only a fail safe safety function?

Reply: It is the opinion of the Committee that the requirements of ASME/ANSI OMa-1988, Part 10, para.4.2.1.4, Power-Operated Valve Stroke Testing; para. 4.2.1.8, Stroke Time Acceptance Criteria; and para. 4.2.1.9(b) need not be met. All other applicable requirements of para. 4.2 shall be met for ASME/ANSI OMa-1988, Part 10.

Further, the requirements of OM Code-1995, ISTC 4.2.4, Power-Operated Valve Stroke Testing; ISTC 4.2.8, Stroke Time Acceptance Criteria; and ISTC 4.2.9(b) need not be met. All other applicable requirements of the paragraph shall be met.

Any abnormality or erratic action experienced during valve exercising shall be recorded in the record of tests, and an evaluation shall be made regarding need for corrective action.

The power-operated control valves listed in Table VNC-5 have only a fail safe function. We propose applying the alternative rules described in Code Case OMN-8 to the control valves listed in Table VNC-5. This alternative to the requirements of ISTC-5131, ISTC-5132 and ISTC-5133 provides an acceptable level of quality and safety.

Alternate Testing

The control valves listed in Table VNC-5 will be tested to the requirements of Code Case OMN-8.

Table VNC-5

Valve Number	System	OM Category	ASME Class	Function
1-FW-FCV-1478 1-FW-FCV-1488 1-FW-FCV-1498	Feedwater	B	NC	Main Feedwater Regulating Valves
1-FW-HCV-155A 1-FW-HCV-155B 1-FW-HCV-155C	Feedwater	B	NC	Main Feedwater Regulating Bypass Valves

RELIEF REQUEST VNC-6

System : EE

Valve(s) : 1-EE-015
1-EE-019
1-EE-028
1-EE-035

Category : NC

Class : 3

Function: Diesel Fuel Oil Pump Discharge Check Valves

ISTC Code Requirements Which Will Not Be Met

ISTC 5221(c)(3) states that "At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years."

Justification for Disassembly and Examination

Each fuel oil supply line is a dedicated flow path with no cross connect line to the other fuel oil supply lines. Therefore, the check valves cannot be back pressure tested with flow. Given the system configuration and the accessibility of the check valves, disassembly and examination is the preferred method to verify valve closure.

Basis for Alternative to (ISTC-5221(c)(3))

These valves can be disassembled and examined while the plant is operating. From a work planning standpoint, the worst time to schedule the removal of a diesel fuel oil supply train from service for the purpose of valve disassembly is during a refueling outage. Most major work activities can only be performed during the refueling outage. These activities are carefully planned to maximize the availability of safety related equipment and to preserve plant safety margin. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valves on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage.

RELIEF REQUEST VNC-6 (Cont.)

Alternate Testing

These valves will be exercised full open every three months. One valve in the group will disassembled and examined on a reactor refueling test frequency (nominally every 18 months but not to exceed 24 months) and on a rotating basis to verify closure per the requirements of ISTC 4.5.4(c).

5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

A record of each pump will be maintained in accordance with ISTB-9100 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other identification number,

2) a copy or summary of the manufacturer's acceptance test report if available,

3) a copy of the pump manufacturer's operating limits.

A record of inservice test plans will be maintained in accordance with ISTB-9200 that includes the following:

1) category of each pump,

2) the hydraulic circuit to be used,

3) the location and type of measurement for the required test parameters and

4) the method of determining reference values which are not directly measured by instrumentation.

A record of test results will be maintained in accordance with ISTA-9230 that includes the following:

1) equipment identification,

2) date of test or examination,

3) reason for test or examination (e.g., post maintenance, routine inservice test or examination, establishing reference values, etc.),

4) test or examination procedure used;

5) identification of test equipment used;

6) calibration records;

7) values of measured parameters;

8) comparison with allowable ranges of test and examination values, and analysis of deviations;

9) requirement for corrective action; and

10) printed (or typed) name and signature of the person(s) responsible for conducting and analyzing the test and examination.

In accordance with ISTA-9240, the Owner shall maintain records of corrective action that shall include a summary of the corrective actions made, the subsequent inservice test or examination, confirmation of operational adequacy, and the printed (or typed) name and signature of the person(s) responsible for the corrective action and verification of results.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

5.2 VALVE INSERVICE TESTING PROGRAM

A record of each valve will be maintained in accordance with ISTC-9110 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other unique identification number,

2) a copy or summary of the manufacturer' acceptance test report if available,

3) preservice test results and

4) limiting value of full stroke time.

This IST Program Plan meets the requirements of ISTC-9200, Test Plans. A record of test results will be maintained in accordance with ISTA-9230. A record of corrective action will be maintained in accordance with ISTA-9240. The Valve Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

6.0 QUALITY ASSURANCE PROGRAM

The Pump and Valve Inservice Test Program activities will be conducted in accordance with the Technical Specifications for Surry Power Station.

ATTACHMENT 3

SURRY UNIT 2
INSERVICE TESTING PROGRAM
FOURTH TESTING INTERVAL UPDATE SUMMARY

VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)

SURRY UNIT 2
INSERVICE TESTING PROGRAM
FOURTH TESTING INTERVAL UPDATE SUMMARY

The Surry Unit 2 ASME Inservice Testing (IST) Program for Pumps and Valves has been updated for the fourth 10 year testing interval which starts on May 10, 2004. The Unit 2 IST program has the same fourth testing interval start date as Unit 1.

This update is required every 10 years by the Code of Federal Regulations, 10 CFR 50.55a(f)(4)(ii) which states in part that the IST programs "must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months prior to the start of the 120-month interval." The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, the 1998 Edition, the 1999 Addenda and the 2000 Addenda. The Code reference became effective on October 28, 2002 and applies to the fourth IST interval for Surry Unit 2. The Surry Unit 2 IST program has been updated to comply with these edition and addenda. There are two changes in the new Code (one for pumps and one for valves) that have a significant impact on the fourth 10 year testing interval IST program.

Significant Code Change for Pumps

In addition to the quarterly tests, the new Code requires that a pump test be performed every 24 months using pressure instrumentation more accurate (0.5%) than that required for the quarterly tests (2.0%) and that the test be performed within 20% of the pump design flow. This new test is called a comprehensive pump test. Also, if a pump is replaced or refurbished to "like new" or original condition, the Code requires that we measure five points along the pump curve where system resistance can be varied, before putting the pump inservice using the 0.5% pressure instrumentation. All 41 pumps in the Unit 2 IST program will be affected by these new requirements.

There are two sets of pumps where the required flow for the comprehensive tests (within 20% of design flow) cannot be achieved. The flow for the containment spray pumps and the outside recirculation spray pumps can only be established in their test loops which restricts flow to less then 80% (within 20%) of design flow. Relief Requests P-6 and 7 address these cases. The remaining relief requests (P-1 through P-5) were brought forward from Interval 3. These relief requests have been updated to the new Code requirements and rearranged to accommodate a new format for the pump table.

Significant Code Change for Valves

The new Code has some substantial changes from previous Code editions in the area of check valve testing. The new Code requires that check valves be tested in both directions, even if they have a safety function in only one direction. There are 138 check valves in the current Surry Unit 2 IST program. Of these 138 valves, 90 have a safety function in only one direction. New test procedures need to be developed or existing test procedures revised for these check valves in order for the fourth interval IST Program to be in compliance with the new Code.

Interval 4 IST Program Update Summary

Below is a section by section summary of changes between the third interval IST program and the fourth interval IST program for Surry Unit 2.

Section 1.0 INTRODUCTION

The starting and ending dates for the fourth interval are described.

Section 2.0 GENERAL PROGRAM DEVELOPMENT

References to Section XI, 1989 Edition and OM Parts 6 and 10 OMa-1988 Addenda were replaced by references to ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, 1998 Edition, 1999 Addenda and 2000 Addenda. Also, "cold shutdown" was changed to "safe shutdown" in the statements describing the Code required scope of components to be included in the IST program. No scope changes are being made to the Interval 4 IST program as a result of Code change from "cold shutdown" to "safe shutdown."

Section 2.1 Program Scope

The Code references were updated.

Section 2.2 Program Update

Minor editorial changes were made.

Section 2.3 Program Relief Requests

This section was deleted along with Relief Request G-1. Relief Request G-1 excluded the ANII from the inservice testing process as required by Section XI, IWA-2110, Duties of the Inspector. The new Code does not have responsibilities for the ANII.

Section 3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

Section 3.1 Program Development Philosophy

The Code references were updated and redundant verbiage regarding the Code was deleted.

Section 3.2 Program Implementation

This section was expanded to describe the new Code grouping for pumps and additional testing requirements. There are substantial differences between the requirements of the current Code for pump testing (OM Part 6, OMa-1988) and the new Code (ISTB). Below is a summary of these differences.

ISTB divides pumps into Group A pumps and Group B pumps. These groups are defined as:

> Group A pumps - pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations
>
> Group B pumps - pumps in standby systems that are not operated routinely except for testing

Group A and B pumps must be tested every 3 months except where a relief request has been submitted extending the test interval. The test frequency did not change from the previous Code. For the quarterly Group A pump tests, differential pressure, flow, vibration and speed (for variable speed pumps) must be measured with flow being within 20% of design flow if practicable. For the quarterly Group B tests, differential pressure, flow, and speed (for variable speed pumps) must be measured with flow being within 20% of design if practicable. Note that vibration need not be measured for Group B tests. If testing within 20% of design flow is not practicable, it will be noted in the IST program plan.

Pumps lacking the required fluid inventory (e.g., inside and outside recirculation spray pumps) need only be tested once every 24 months per ISTB-3430. This requirement has not changed from the previous Code.

ISTB requires additional tests called comprehensive tests. Comprehensive tests require that the pressure instruments have an accuracy of 0.5% instead of the 2% required for the Group A and B tests, and by the old Code. The accuracy requirements for flow and vibration remain the same for the comprehensive tests.

Also, ISTB describes a preservice comprehensive test and an inservice comprehensive test. The preservice comprehensive test is described in ISTB-3100 which states in part,

(a) For centrifugal and vertical line shaft pumps in systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow. A pump curve shall be established based on the measured points. At least one point shall be designated as the reference point(s). Data taken at the reference point will be used to compare the results of inservice tests. A pump curve need not be established for pumps in systems where resistance cannot be varied.

The preservice comprehensive test must be performed before a new pump is placed into service or after a major overhaul of an existing pump. The inservice comprehensive test must be performed every 24 months with the 0.5% pressure gauges. Only one point on the pump curve (within 20% of design flow) need be verified for the comprehensive tests.

Section 3.3 Program Administration

Redundant verbiage was deleted.

Section 3.4 Pump Reference List

Information concerning the pump groups was added.

Section 3.5 Pump Inservice Test Table

The format of the Pump Inservice Test Table was changed to allow the table to be generated directly from the pump database. Also, columns for pump group, test flow path and status of the reference flows were added. In the table, the comprehensive test requirements were added. These tests have the prefix "C_" to distinguish them from the quarterly test requirements. An extensive note section was added after the table to explain why the 20% of design flow is not achieved for some of the pumps.

Unit 2 Pump No.	Comments/Program Change
1-CC-P-1C 1-CC-P-1D	In Relief Request P-3, references to two points and a straight line approximation were replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria. Note 1 was added to explain why the 20% of design flow may not be achieved for the quarterly tests. Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-16 from Interval 3 has been replaced in part by Relief Request P-3 for Interval 4.

Unit 2 Pump No.	Comments/Program Change
1-CH-P-2C 1-CH-P-2D	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-18 from Interval 3 has been replaced by Relief Request P-4 for Interval 4. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
1-EE-P-1B 1-EE-P-1E	Program Change: Comprehensive tests have been added to be performed every 24 months. Because the diesel fuel transfer pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
2-CC-P-2A 2-CC-P-2B	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-19 from Interval 3 has been replaced by Relief Request P-5 for Interval 4. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Program Change: Comprehensive tests have been added to be performed every 24 months. Also, Note 2 was added to explain why 20% of design flow is not achieved for the quarterly tests.
2-CS-P-1A 2-CS-P-1B	The test loop does not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing. Therefore, Relief Request P-6 was added to address these issues. Also, Note 3 was added to explain why the 20% of design flow is not achieved for the tests. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy. Relief Request P-6 and Note 3 were added to allow testing within 50% of design flow instead of the 20%, and to perform a preservice test at two points on the pump curve instead of five as required by Code. Because the containment spray pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
2-FW-P-2 2-FW-P-3A 2-FW-P-3B	Program Change: Comprehensive tests have been added to be performed every 24 months. Because the auxiliary feedwater pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
2-RH-P-1A 2-RH-P-1B	Program Change: Comprehensive tests have been added to be performed every 24 months. Relief Request P-7 from Interval 3 has been replaced by Relief Request P-2 for Interval 4. The basis of the relief request remains unchanged from Interval 3.

Unit 2 Pump No.	Comments/Program Change
2-RS-P-1A 2-RS-P-1B	The inside recirculation pumps lack the required fluid inventory to perform testing. Per the Code, a comprehensive test needs to be performed every 24 months. There is no Code requirement for a Group B test for these pumps. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy.
2-RS-P-2A 2-RS-P-2B	The outside recirculation pumps lack the required fluid inventory to perform testing. Per the Code, a comprehensive test needs to be performed every 24 months. There is no Code requirement for a Group B test for these pumps. The test loop does not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing. Therefore, Relief Request P-7 was added to address these issues. Note 4 was added to explain why the 20% of design flow is not achieved for the comprehensive tests. Program Change: Changed OM-6 tests to comprehensive tests with the more restrictive pressure gauge accuracy. Relief Request P-7 and Note 4 were added to allow testing within 64% of design flow instead of the 20% and to perform a preservice test at one point on the pump curve instead of five as required by Code.
2-SI-P-1A 2-SI-P-1B	Program Change: Comprehensive tests have been added to be performed every 24 months. Also, Note 5 was added to explain why the 20% of design flow is not achieved for the quarterly tests. Because the low head safety injection pumps are Group B pumps, vibration measurement requirements were removed for the quarterly tests.
2-SW-P-10A 2-SW-P-10B	Program Change: Comprehensive tests have been added to be performed every 24 months.

<u>Section 3.6 Pump Test Program Relief Requests</u>

The NRC approved the third interval relief requests that are referenced in the following table for use for the third interval. All relief requests for the fourth testing interval have to be approved by the NRC regardless of their approval status from the third interval.

During the course of Interval 3, certain relief requests were withdrawn. The relief request numbers for Interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 2 Relief Request	Program Change
P-1	Relief Request P-1 establishes a minimum reference value of 0.05 ips to be used for vibration testing. A table was added listing the pumps that currently have at least one vibration location with a measured reference value less then 0.05 inches per second. The basis for relief was expanded to include experience gained from the predictive maintenance program and a description of the predictive maintenance program. In the alternate testing section, references to the predictive maintenance program and 10 CFR 50.55a(a)(3)(i) were added.
P-2	Relief Request P-2 was P-7 in the interval 3 IST program. This relief request allows 2-RH-P-1A and B to be tested during cold shutdowns. The basis was expanded for the Interval 4 version.
P-3	Relief Request P-3 was P-16 in the interval 3 IST program and applies to 1-CC-P-1C and D. References to two points and a straight line approximation was replaced by reference to using Code Case OMN-9, "Use of a Pump Curve for Testing" in the relief request. OMN-9 is the Code accepted method for dealing with using a portion of the pump curve as a reference for acceptance criteria.
P-4	Relief Request P-4 was P-18 in the interval 3 IST program and applies to 1-CH-P-2C and D. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
P-5	Relief Request P-5 was P-19 in the interval 3 IST program and applies to 2-CC-P-2A and B. The relief request applies to the permanently installed suction pressure gauges. The basis of the relief request remains unchanged from Interval 3.
P-6	Relief Request P-6 was added to the IST Program. The test loops for pumps 2-CS-P-1A and B do not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing.
P-7	Relief Request P-7 was added to the IST Program. The test loops for pumps 2-RS-P-2A and B do not allow for testing within 20% of design flow which is required by the Code for comprehensive tests and does not allow for testing at five points on the pump curve as required for preservice testing.

Section 3.7 Alternative Testing for Non-Code Pumps.

This section deals with pumps that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code pumps. Relief from Code provisions is not required for non-Code pumps. However, cases where the Code provisions are not met are document in this section. The Code references were updated in this section.

Unit 2 Non-Code Alternative Testing	Comments/Program Change
PNC-1	PNC-1 applies to 1-EE-P-1B and 1E. The Code references were updated and reference to a lower limit on the vibration reference value (0.05 ips) was added.

Section 4.0 VALVE INSERVICE TESTING PROGRAM DESCRIPTION

Section 4.1 Program Development Philosophy

A portion of the program development philosophy description was replaced by similar verbiage from the pump section to maintain consistency.

Section 4.2 Program Implementation

The Code references were updated and reference to the check valve disassembly sampling plan in GL 89-04 was deleted. This sampling plan is included in the new Code.

Section 4.3 Program Administration

This section was revised to more clearly describe the administrative responsibilities.

Section 4.4 Valve Inservice Test Table

The Code references were updated. The new Code requires that check valves be tested in both directions, even if they have a safety function in only one direction. Also, the Code states that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." These requirements are new with the 1997 Addenda, 1998 Code Edition, 1999 and 2000 Addenda and are responsible for most of the changes in the valve program.

Unit 2 Valve No.	Comments/Program Change
2-CC-001 2-CC-058 2-CC-059	These check valves are on the CC supply lines to the RCPs. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pumps. This verbiage was added to Reactor Refueling Justification RRV-10.
2-CC-177	The requirement to test check valves to the partially open position was deleted from the new Code. Program change: The requirement to test to the partially open position every three months was deleted.
2-CC-181 2-CC-185	These manual valves are on the CC return lines from the RHR heat exchangers. The new Code has a five year test interval for manual valves. However, the NRC changed this test interval from five years to two years in the Code of Federal Regulations that became effective on October 28, 2002. The test interval in the old Code was three months. These valves were tested every reactor refueling and were included in RRV-10 for Interval 3. RRV-10 was replaced by RRV-9 for Interval 4. The manual valves were removed from RRV-9 because the Code change made the deferral unnecessary. Program change: The test interval was changed from reactor refueling to 24 months.
2-CC-224 2-CC-233 2-CC-242	These check valves are on the CC supply lines to the containment recirculation air coolers. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor containment air recirculation coolers. This verbiage was added to RRV-11.
2-CC-806	This check valve is on the makeup line to the charging pump seal cooling water surge tank. The open test frequency was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Program change: A close test was added. To verify the close position, this valve will be radiographed on a reactor refueling frequency as described in Relief Request V-5. The open test interval was changed from cold shutdown to reactor refueling.

Unit 2 Valve No.	Comments/Program Change
2-CC-094 2-CC-095 2-CC-555 2-CC-556 2-CC-557 2-CC-592	These valves are on the CC supply to the RCP thermal barriers. The valves are currently tested to the close position every reactor refueling. Program change: The open test was added. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pump thermal barriers. This verbiage was added to RRV-7.
2-CC-LCV-201	This tank level control valve is on the makeup line to the charging pump seal cooling water surge tank. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. The NRC has not yet approved code Case OMN-8 for use. Therefore, relief from the Code requirement is necessary. Program Change: The stroke time requirement was removed per Relief Request V-1.
1-CH-109 1-CH-116	These check valves are on the boric acid transfer pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added to be performed every three months.
2-CH-225 2-CH-227 2-CH-229	These check valves are on the emergency and manual emergency boration lines. The open test frequency is unchanged from Interval 3. However, the test frequency discussion in RRV-20 was revised to clarify the point that if the reactor coolant boric acid concentration drops below 100 ppm, quarterly testing to the open position will be deferred until the next refueling outage. Program change: A close test was added. To verify the close position, this valve will be radiographed on a reactor refueling frequency as described in Relief Request V-4.
2-CH-228	This manual valve is on the manual emergency boration line. The valve was tested every cold shutdown and was included in CSV-19 for Interval 3. CSV-19 was replaced by CSV-11 for Interval 4. The manual valve was removed from CSV-11 because the Code change made the deferral unnecessary. Program change: The test interval was changed from cold shutdown to every 24 months.

Unit 2 Valve No.	Comments/Program Change
2-CH-230	This check valve is on the discharge from the volume control tank. It is subject to leak testing based on a recommendation stemming from the Type 1 Report NP-2778 entitled "CHECK VALVE LEAKAGE TO VCT" dated 5/11/93. The conclusions in NP-2778 were reevaluated in ET S 01-0149. It was determined that check valve 2-CH-230 does not have a leakage requirement and does not have to be leak tested. The valve should have a "functional operability verification test." Therefore, the valve will continue to be tested to the close position but the leak test will be deleted. Program change: The leak test was deleted.
2-CH-256 2-CH-265 2-CH-274	These check valves are on the charging pump recirculation lines. The valves are currently tested to the open position every three months. Program change: The close test was added to be performed every three months.
2-CH-258 2-CH-267 2-CH-276	These check valves are on the charging pump discharge lines. The valves are currently tested to the open position every reactor refueling and to the close position every three months. Program change: The requirement to test to the partially open position every three months was deleted.
2-CH-309	This check valve is on the main charging supply header. The valve is currently tested to the close position every cold shutdown. Program change: The open test was added. Normal operation of the charging system during power operation verifies that the valve opens. This verbiage was added to Cold Shutdown Justification CSV-20.
2-CH-FCV-2113A	This flow control valve is on the alternate emergency boration line. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. The NRC has not yet approved code Case OMN-8 for use. Therefore, relief from the Code requirement is necessary. Program Change: The stroke time requirement was removed per Relief Request V-1.
2-CH-FCV-2114A	This flow control valve is on the primary grade water supply line. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Relief Request V-1.

Unit 2 Valve No.	Comments/Program Change
2-CS-045	This check valve isolates the RWST cooling system return line. The valve is currently disassembled and examined every reactor refueling to verify the close position. Program change: The open test was added. Normal operation of the RWST cooling system verifies that the valve opens. Relief Request V-3 was added and seeks relief from having to perform the disassembly during the reactor refueling outage as required by the Code, and instead perform the disassembly during power operation on an 18 month interval.
1-EE-013 1-EE-031	These check valves are on the diesel fuel oil pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added. These valves will be disassembled and examined to verify the close position on an 18 month interval as described in Non-Code Alternative Test VNC-6. Because these valves are non-ASME Class valves, relief from disassembly during the refueling outage period is not required.
2-EG-040 2-EG-042	These check valves isolate the diesel generator air receiver tanks. The valves are currently tested to the close position every three months. Program change: The open test was added. The open position is verified by normal system operation.
2-FW-010 2-FW-041 2-FW-072	These check valves isolate main feedwater flow. The valves is currently disassembled and examined on a rotating basis every reactor refueling to verify the close position. Program change: The open test was added. The open position is verified during normal operation of the main feedwater system. This verbiage was added to RRV-13.
2-FW-027 2-FW-058 2-FW-089	These check valves are on the auxiliary feedwater headers and are located near the main feedwater headers. The valves are currently tested to the open position every cold shutdown. Program change: The close test was added to be performed every cold shutdown as described in CSV-21.
2-FW-131 2-FW-133 2-FW-136 2-FW-138	These check valves are on the auxiliary feedwater headers and are located near the containment penetrations. The valves are currently tested to the open position every cold shutdown. Program change: The close test was added to be performed every reactor refueling as described in RRV-19. The open test frequency was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a).

Unit 2 Valve No.	Comments/Program Change
2-FW-144 2-FW-159 2-FW-174	These check valves are on the auxiliary feedwater pump recirculation lines. The valves are currently disassembled and examined on a rotating basis to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings using the current disassembly and examination as described in RRV-15.
2-FW-148 2-FW-163 2-FW-178	These check valves are on the auxiliary feedwater lines that supply the pump oil coolers. The valves are currently disassembled and examined on a rotating basis to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings using the current disassembly and examination as described in RRV-15.
2-FW-272 2-FW-273 2-FW-305 2-FW-306	These check valves are on the auxiliary feedwater cross-connect headers. The valves are currently tested to the open position every reactor refueling. Program change: The close test was added to be performed every reactor refueling as described in RRV-12.
2-FW-FCV-2478 2-FW-FCV-2488 2-FW-FCV-2498 2-FW-HCV-255A 2-FW-HCV-255B 2-FW-HCV-255C	These non-Code Class control valves regulate main feedwater flow and bypass feedwater flow. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Non-Code Alternative Test VNC-5.
2-IA-381 2-IA-384	These non-Code Class check valves are on the bottled air supply lines to valves 2-RC-PCV-2455C and 2456. Program change: The close test was added to be performed every reactor refueling as described in VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.
2-IA-395 2-IA-396	These non-Code Class check valves are on the bottled air supply lines to valves 2-RC-PCV-2455C and 2456. Program change: The open test was added to be performed every reactor refueling as described in non-Code Alternative Test VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.

Unit 2 Valve No.	Comments/Program Change
2-IA-864 2-IA-868	These check valves isolate the instrument air to containment lines. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Normal operation of the containment instrument air system verifies that 2-IA-864 opens. This verbiage was added to RRV-6. Valve 2-IA-868 will be exercised open every reactor refueling.
2-IA-947 2-IA-948	These non-Code Class check valves are on the bottled air supply lines to valves 2-MS-SOV-202A and B. Program change: The open test was added for 2-IA-947 and the close test added for 2-IA-948 to be performed every reactor refueling as described in VNC-1. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. This verbiage was added to VNC-1.
2-MS-087 2-MS-120 2-MS-158	These manual valves are on the main steam supply lines to the terry turbine. Program change: The test interval was changed from three months to every 24 months.
2-MS-NRV-201A 2-MS-NRV-201B 2-MS-NRV-201C	These check valves are the main steam non-return valves. The valves are currently tested to the close position on a rotating basis every reactor refueling. Program change: The open test was added. The open position is verified by the normal operation of the main steam system. This verbiage was added to VNC-4.
2-MS-RV-201A 2-MS-RV-201B 2-MS-RV-201C	These pressure control valves are on the main steam lines. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Also, to perform the fail safe test the valves must be stroked and observed locally. The main steam valve house is a hot environment and hazardous to the test personnel. The test frequency is being extended from every three months to reactor refueling per RRV-24. The open test requirement is being deleted. These valves operate as pressure control valves in the open position. Per ISTC-1200, the pressure regulating function is excluded from the testing requirements of ISTC. Program Change: The stroke time requirement was removed per Relief Request V-1 and the open test deleted. The exercise frequency is being extended from three months to every reactor refueling per RRV-24.

Unit 2 Valve No.	Comments/Program Change
2-RC-160	This check valve isolates the primary grade water supply line to the pressurizer relief tank. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Following each outage, the PRT is normally filled with water supplied from the PG makeup system. Filling the PRT verifies that valve 2-RC-160 opens. This verbiage was added to RRV-6.
2-RH-047	This check valve is located downstream of the RHR heat exchanges on one of two parallel lines that come off a common header and discharge to the RCS cold legs. Just upstream is the motor operated isolation valve 2-RH-MOV-2720A. There are no vents or drains between the check valve and 2-RH-MOV-2720A. With the current piping configuration the upstream piping cannot be vented and leakage collected during a back pressure test on the check valve. Therefore, the valve will be disassembled and examined. The open position is verified every cold shutdown as described in CSV-4. Program change: The close test was added. Disassembly and examination as described in RRV-26 will verify the close position.
2-RH-MOV-2700 2-RH-MOV-2701 2-RH-MOV-2720A 2-RH-MOV-2720B	The RHR suction valves 2-RH-MOV-2700 and 2701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled. The RHR return isolation valves 2-RH-MOV-2720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals. Program change: The test interval was changed from cold shutdown to reactor refueling as described in RRV-18.
2-RM-003	This check valve isolates the return line from the radiation monitoring cabinet to containment. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Normal operation of the radiation monitoring system during power operation verifies that valve 1-RM-3 opens. This verbiage was added to RRV-6.

Unit 2 Valve No.	Comments/Program Change
2-SI-025	This check valve is on the RWST supply line to the charging pumps. The valve is currently tested to the open and close positions every reactor refueling. Program change: The exercise test to the partially open position was deleted.
2-SI-046A 2-SI-046B	These check valves are on the RWST supply lines to the LHSI pumps. The valves are exercised open every refueling outage by verifying full flow through the valves. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-2. The exercise test to the partially open position was deleted.
2-SI-047 2-SI-056	These check valves are on the LHSI supply line from the containment sump. The valves are currently disassembled and examined to verify the open position. Program change: The close test was added. The close position will be verified during reactor refuelings by the current disassembly and examination as described in RRV-14.
2-SI-050 2-SI-327	These check valves are on the discharge lines of the LHSI pumps. The valves are currently tested to the open position every reactor refueling and to the close position during cold shutdowns. The open test can only be performed during reactor refuelings as described in RRV-2. The new Code (ISTC-3522(a)) states that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Therefore, the close test that was performed during cold shutdowns will now be performed during reactor refuelings. Program change: The test interval for the close test was changed from cold shutdown to reactor refueling as described in RRV-2.
2-SI-053 2-SI-061	These valves are on the LHSI pump recirculation lines and can be tested to the full open position every three months. Due to the piping configuration, valves 2-SI-53 and 61 are normally back pressure tested with valves 2-SI-50 and 327. The valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a separate local back pressure leak test for these valves at a test interval that is different than the interval for valves 2-SI-50 and 327. Program change: The test interval for the close test was changed from cold shutdown to reactor refueling as described in RRV-2.

Unit 2 Valve No.	Comments/Program Change
2-SI-107 2-SI-109 2-SI-128 2-SI-130 2-SI-145 2-SI-147	These are the SI accumulator discharge check valves. They are tested to the open position by discharging an accumulator and recording the impact of the disk when it fully opens and strikes the back seat. Accelerometers are used to detect the impact. These instruments can also be used to detect the impact when the valves close. One train is instrumented each outage. Program change: The close test was added. The close position will be verified during reactor refuelings using non-intrusive techniques as described in RRV-3.
2-SI-224 2-SI-225 2-SI-226 2-SI-227 2-SI-228 2-SI-229	These check valves isolate the safety injection lines at the containment penetrations. The valves are currently tested to the open position every reactor refueling. Program change: The close test was added to be performed every reactor refueling as described in RRV-4. The close position will be verified by a back pressure leak test.
2-SI-304	This check valve is on the nitrogen supply line to the SI accumulators. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6. Charging of the SI accumulators during each refueling outage is adequate verification of the open position. This verbiage was added to RRV-6.
2-SI-400	This check valve is on the RWST supply line to the charging pumps. The valve is currently tested to the open position every reactor refueling. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-5. The exercise test to the partially open position was deleted.
2-SW-246 2-SW-248 2-SW-250 2-SW-252	These check valves are on the recirculation spray heat exchanger service water return vents. In the current test procedure, force is applied using a mechanical hooking device to separate the disk from the valve seat, and the disk is verified to move freely to the open position. This test verifies both the open and close positions. Program change: The close test was added to be performed every three months. The current test procedure will be used to verify the close position.

Unit 2 Valve No.	Comments/Program Change
2-SW-247 2-SW-249 2-SW-251 2-SW-253	These check valves are on the recirculation spray heat exchanger service water supply vents. There is no instrumentation to measure flow or differential pressure across the valves. The valves are inaccessible and cannot be manually manipulated without disassembly. Program change: The close test was added. The close position will be verified during reactor refuelings by the current disassembly and examination as described in RRV-22.
2-SW-442 2-SW-445	These check valves are on the charging pump service water pump discharge lines. The valves are currently tested to the open position every three months. Program change: The close test was added. The close position will be verified during reactor refuelings by disassembly and examination as described in RRV-25.
2-SW-TCV-208A 2-SW-TCV-208B 2-SW-TCV-208C	These air operated valves control the service water temperature across the charging pump lube oil coolers. Code Case OMN-8 eliminates stroke time measurements for power-operated control valves that only have a fail safe function. Program Change: The stroke time requirement was removed per Relief Request V-1.
2-VP-012	This check valve is on the condenser air removal discharge line to containment. The valve is currently tested to the close position every reactor refueling. Program change: The open test was added to be performed every reactor refueling as described in RRV-6.

Section 4.5 Valve Test Program Relief Requests

The NRC approved the third interval relief requests that are referenced in the following table for use for the third interval. All relief requests for the fourth testing interval have to be approved by the NRC regardless of their approval status from the third interval.

During the course of Interval 3, certain relief requests were withdrawn. The relief request numbers for Interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 2 Interval 4 Relief Request	Unit 2 Interval 3 Relief Request	Comments
V-1	V-47	Relief Request V-1 supersedes V-47 and requests using Code Case OMN-8. ISTC 1.2(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves. However, if these valves have a safety function to fail to an open or close position, then the testing requirements for power-operated valves are imposed, which includes the measurement of stroke time. Code Case OMN-8 eliminates the stroke time requirements for control valves that only have a fail-safe function. Relief Request V-47 required that the stroke time be measured and compared to a maximum allowable stroke time, but it eliminated the acceptance range around a reference stroke time for the valves listed in the relief request. Program Change: Relief Request V-1 supersedes V-47 and eliminates the stroke time requirements for control valves that only have a fail-safe function.
V-2	V-52	Relief Request V-2 used to be V-52 and pertains to the RWST isolation valves. Program Change: The Code reference was updated. Also, a description of the evaluation to be used instead of repair or replacement was added to Relief Request V-2 for the RWST isolation valves. In the alternate testing section, 10 CFR 50.55a(a)(3)(i) was added as a reference.
V-3	NA	Relief Request V-3 replaces Reactor Refueling Justification RRV-9. V-3 requests relief from performing disassembly and examination of the RWST cooling system check valve 2-CS-45 during refueling outages. Instead, the disassembly and examination will be performed on a reactor refueling frequency (nominally every 18 months). Program change: Relief Request V-3 was added to the IST program and the test interval was changed from every refueling to a refueling frequency (nominally every 18 months).

Unit 2 Interval 4 Relief Request	Unit 2 Interval 3 Relief Request	Comments
V-4	NA	Relief Request V-4 was added to request relief from performing radiographs on the emergency and manual emergency boration line isolation check valves during reactor refueling outages. The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c). Program change: Relief Request V-4 was added to the IST program to allow the radiographs to be performed on a refueling frequency (nominally every 18 months).
V-5	NA	Relief Request V-5 was added to request relief from performing radiographs on the charging pump seal cooling surge tank makeup line check valve during reactor refueling outages. The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c). Program change: Relief Request V-5 was added to the IST program to allow the radiographs to be performed on a refueling frequency (nominally every 18 months).
	V-5	Relief Request V-5 pertained to the disassembly and examination of the main feedwater check valves 2-FW-10, 41 and 72 using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-13. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-20	Relief Request V-20 pertained to the disassembly and examination of the LHSI suction check valves 2-SI-47 and 56 using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-14. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.

Unit 2 Interval 4 Relief Request	Unit 2 Interval 3 Relief Request	Comments
	V-26	Relief Request V-26 described using the sampling plan in NUREG-1482 when placing instrumentation on the SI accumulator discharge check valves for non-intrusive testing. For example, if three trains are being tested, only the check valves on one train need be instrumented while all three trains are flowed. According to the NRC in NUREG-1482, "Relief is not required because the method meets the "other positive means" of the Code if each valve in the group is flow tested at the regular frequency." Program Change: The descriptions of the sampling plan were rolled into Reactor Refueling Justification RRV-3, and the relief request was removed from the program.
	V-41	Relief Request V-41 described the disassembly and examination of the check valves on the auxiliary feedwater pump recirculation lines and pump oil cooler lines using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-15. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-42	Relief Request V-42 described the disassembly and examination of the check valves on the main steam supply lines to the turbine driven auxiliary feedwater pump using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-16. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-43	Relief Request V-43 described the disassembly and examination of the check valves on the containment spray pump discharge lines using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-17. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.
	V-46	Relief Request V-46 described the disassembly and examination of the check valves on the recirculation spray heat exchanger service water supply vent lines using a sampling plan of one valve each refueling outage. It was replaced by Reactor Refueling Justification RRV-22. The new Code allows disassembly and examination of check valves using a sampling plan as described in ISTC-5221(c). Therefore, relief is no longer necessary. Program change: The relief request was removed from the IST program.

Unit 2 Interval 4 Relief Request	Unit 2 Interval 3 Relief Request	Comments
	V-47	Program change: Replaced by V-1.
	V-51	When the NRC approved the 1989 Edition of Section XI, which referenced OM Part 10, OMa-1988, they did so with two provisions pertaining to leak testing Appendix J, containment isolation valves. These provisions required that in addition to the requirements of Appendix J, the licensee must establish maximum allowable leak rates for each valve or group of valves, and initiate corrective action if these limits are exceeded. When the NRC approved the new Code, they dropped these provisions. Relief Request V-51 allowed us to exit an outage even if we exceed the maximum leakage limit for a containment isolation valve. This relief is no longer necessary. Program Change: The relief request was removed from the IST program.
	V-52	Program change: Replaced by V-2.

Section 4.6 Valve Test Program Cold Shutdown Justifications

During the course of interval 3, certain cold shutdown justifications were either withdrawn or replaced. The cold shutdown justification numbers for interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 2 Interval 4 CS Just	Unit 2 Interval 3 CS Just	Comments/Program Change
CSV-1	CSV-1	Program Change: None.
CSV-2	CSV-6	Program Change: None.
CSV-3	CSV-7	Program Change: None.
CSV-4	CSV-8	Program Change: None.
CSV-5	CSV-11	Program Change: None.
CSV-6	CSV-13	Program Change: None.
CSV-7	CSV-15	Program Change: None.
CSV-8	CSV-16	Program Change: None.
CSV-9	CSV-17	Program Change: None.
CSV-10	CSV-18	Program Change: None.

Unit 2 Interval 4 CS Just	Unit 2 Interval 3 CS Just	Comments/Program Change
CSV-11	CSV-19	Check valves 2-CH-225, 227 and 229 were moved to RRV-20 because of the new close test. Manual valve 2-CH-228 was removed from CSV-11 because the Code test interval for manual valves changed from three to 24 months. Program Change: No change for 2-CH-MOV-1380. Valves 2-CH-225, 227, 228 and 229 were removed from CSV-11.
CSV-12	CSV-21	Program Change: None.
CSV-13	CSV-25	Program Change: None.
CSV-14	CSV-27	Program Change: None.
CSV-15	CSV-28	Program Change: None.
CSV-16	CSV-31	Program Change: None.
CSV-17	CSV-33	Program Change: None.
CSV-18	CSV-34	Program Change: None.
CSV-19	CSV-35	Program Change: None.
CSV-20	CSV-36	Program Change: Verbiage was added stating that the normal charging isolation check valve 2-CH-309 is verified open during normal system operation.
CSV-21	CSV-4	Valves 2-FW-131, 133, 136 and 139 were moved to RRV-19. Valves 2-FW-27, 58 and 89 were moved to CSV-21 and a close test was added. The basis for deferring the open test to cold shutdown remains the same from Interval 3. Testing to the close position requires that the auxiliary feedwater path be isolated, the upstream piping vented, and leakage collected at a drain. It is impractical to perform both the open test and the close test during normal operation. Program change: A close test was added along with verbiage describing the impracticality of performing the close test every three months.
	CSV-9	Program change: The test interval for the RHR suction valves 2-RH-MOV-2700 and 2701 was changed from cold shutdown to reactor refueling as described in RRV-18. CSV-9 was deleted.
	CSV-10	Program change: The test interval for the RHR return isolation valves 2-RH-MOV-2720A and 1720B was changed from cold shutdown to reactor refueling as described in RRV-18. CSV-10 was deleted.

Unit 2 Interval 4 CS Just	Unit 2 Interval 3 CS Just	Comments/Program Change
	CSV-30	Program change: A close test was added for check valve 2-CC-806 which is on the makeup line to the charging pump seal cooling water surge tank. To verify the close position, this valve will be radiographed as described in RRV-21. The open test interval was changed from cold shutdown to reactor refueling. CSV-30 was deleted.

Section 4.7 Valve Test Program Reactor Refueling Justifications

During the course of interval 3, certain reactor refueling justifications were either withdrawn or replaced. The reactor refueling justification numbers for interval 4 have been reordered to eliminate gaps in the number sequence.

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-1	RRV-1	Program change: Reference to testing the charging pump discharge check valves 2-CH-258, 267 and 276 to the partially open position was deleted and reference to the current three month close test was added.
RRV-2	RRV-2	Program change: Close test for LHSI pump suction from RWST check valves 2-SI-046A and B was added. Verification is by disassembly and examination. Test interval for the LHSI pump discharge valves (2-SI-050 and 327) close test was changed from cold shutdown to reactor refueling to match the test interval of the open test. Test interval for the LHSI pump recirculation valves (2-SI-053 and 061) close test was changed from cold shutdown to reactor refueling to match the test interval of the discharge valves.
RRV-3	RRV-3	RRV-3 describes the test deferrals for the SI accumulator discharge check valves 2-SI-107, 109, 128, 130, 145 and 147. In the Interval 3 IST program, Relief Request V-26 described a sampling plan that is used with acoustic monitoring to verify the open position. This description was moved to RRV-3 because the sampling plan is included in the new Code. Therefore, relief to use the sampling plan is no longer necessary. A close test was added for these valves. The close position can be verified by acoustic monitoring, so this description was added to the basis. The Interval 3 basis contained justification for not performing a partial open test every cold shutdown. Because partial open tests for check valves are no longer required by Code, this justification was deleted. Program change: The close test was added. The close position will be verified by acoustic monitoring.

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-4	RRV-4	RRV-4 describes the test deferrals for the cold leg and hot leg, high and low head safety injection check valves. Valves 2-SI-224, 225, 226, 227, 228 and 229 only have a safety function in the open direction. However, the new Code requires testing of check valves in both directions. Therefore, a discussion of the close test for these valves was added. Also, Code references were updated. Program change: The close test was added for valves 2-SI-224, 225, 226, 227, 228 and 229.
RRV-5	RRV-5	RRV-5 describes the test deferrals for the charging pump suction from the RWST cross-tie line check valves 2-SI-25 and 400. Program change: The close test was added for valve 2-SI-400. Disassembly and examination will verify the close position.
RRV-6	RRV-6	RRV-6 describes the test deferrals for check valves 2-IA-864 and 868, 2-RC-160, 2-RM-3, 2-SI-304 and 2-VP-12 that serve as Appendix J, containment isolation valves. Program change: The open test was added.
RRV-7	RRV-7	Program change: Reference to normal operation verifying the open position for CC supply to RCP thermal barrier check valves 2-CC-094, 095, 555, 556, 557 and 592 was added.
RRV-8	RRV-8	The charging pump suction from the VCT check vale 2-CH-230 is tested to the open position every three months and to the close position every reactor refueling. Reference to the current open test was added for consistency with other justifications. The leak test requirement was deleted and the basis enhanced to describe the back pressure closure test. Program change: The leak test requirement was deleted.
RRV-9	RRV-10	RRV-9 describes the test deferrals for the component cooling water supply to RHR heat exchanger check valves 2-CC-176 and 177. Manual valves 2-CC-181 and 185 were removed from the justification because the test interval for manual valves is now 24 months per the new Code. Program change: Manual valves 2-CC-181 and 185 were removed from the justification.
RRV-10	RRV-11	Program change: Reference to normal operation verifying the open position for CC supply to RCP cooler check valves 2-CC-1, 58 and 59 was added.
RRV-11	RRV-12	Program change: Reference to normal operation verifying the open position for CC supply to containment air recirculation cooler check valves 2-CC-224, 233 and 242 was added.

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-12	RRV-13	RRV-12 describes the test deferrals for the auxiliary feedwater pump discharge check valves 2-FW-142, 157 and 172, and the auxiliary feedwater cross-connect line check valves 2-FW-272, 273, 305 and 306. A close test was added for the cross-connect valves because of the new Code requirements. The basis for deferring the open test to reactor refueling did not change. Program change: The close test was added for valves 2-FW-272, 273, 305 and 306.
RRV-13		RRV-13 describes the disassembly and examination of the main feedwater check valves 2-FW-10, 41 and 72, and replaces Relief Request V-5. The sampling plan described in V-5 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to normal operation verifying the open was added.
RRV-14		RRV-14 describes the disassembly and examination of the LHSI pump suction check valves 2-SI-47 and 56, and replaces Relief Request V-20. The sampling plan described in V-20 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to the close position being verified by disassembly and examination was added.
RRV-15		RRV-15 describes the disassembly and examination of the auxiliary feedwater pump recirculation check valves 2-FW-144, 159 and 174, and oil cooler check valves 2-FW-148, 163 and 178, and replaces Relief Request V-41. The sampling plan described in V-41 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: Reference to the close position being verified by disassembly and examination was added.
RRV-16		RRV-16 describes the disassembly and examination of the main steam supply to the turbine driven auxiliary feedwater pump check valves 2-MS-176, 178 and 182, and replaces Relief Request V-42. The sampling plan described in V-42 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: None.
RRV-17		RRV-17 describes the disassembly and examination of the containment spray and outside recirculation spray pump discharge check valves 2-CS-13, 24, 104 and 105, and 1-RS-11 and 17, and replaces Relief Request V-43. The sampling plan described in V-43 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change: None.

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-18		RRV-18 replaces CSV-8 and 9. The test interval for the RHR system motor operated isolation valves was changed from cold shutdown to reactor refueling. The RHR suction valves 2-RH-MOV-2700 and 2701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled. The RHR return isolation valves 2-RH-MOV-2720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals. Program change: The test interval was changed from cold shutdown to reactor refueling.
RRV-19	CSV-4	Valves 2-FW-131, 133, 136 and 139 were moved to RRV-19 from CSV-4 in Interval 3. The close test was added and is impractical to perform at cold shutdown. Back pressure testing these valves requires that the auxiliary feedwater headers be isolated, the upstream piping vented and the downstream piping be pressurized. It is estimated that it will take one crew an entire shift to perform the back pressure test for these valves. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. The test frequency for the open test was changed from cold shutdown to reactor refueling to coincide with the test frequency of the close test. This change is allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests." Program change: The test frequency for the open test was changed from cold shutdown to reactor refueling and the justification for the close test was added.
RRV-20		The open test frequency for the emergency and manual boration line isolation check valves 2-CH-225, 227 and 229 is unchanged from Interval 3. However, the test frequency discussion was revised to clarify the point that if the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.
RRV-21		Program change: The open test frequency for check valve 2-CC-806 was changed from cold shutdown to reactor refueling to coincide with the close test frequency as allowed by ISTC-3522(a) which states in part that "Open and close tests need only be performed at an interval when it is practicable to perform both tests."

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-22		RRV-22 describes the disassembly and examination of check valves 2-SW-247, 249, 251 and 253 on the recirculation spray heat exchanger service water supply vents, and replaces Relief Request V-46. The sampling plan described in RRV-22 is now allowed by the new Code. Therefore, relief is no longer necessary. Program change. Reference to the close position being verified by disassembly and examination was added.
RRV-23	RRV-14	RRV-23 defers the exercise tests for the recirculation spray heat exchanger service water isolation MOVs. Stroking the MOVs every three months degrades the valve seat leak tightness. Program change: None.
RRV-24		RRV-24 defers the exercise tests for the main steam header discharge to atmosphere pressure control valves 2-MS-RV-201A, B and C. These valves are located above the main steam lines on the top floor of the main steam valve house. The top floor of the main steam valve house is exposed to heat loads from the main steam lines and is a high temperature environment, particularly in the summer time. If the plant is at power, upstream isolation valves must be closed manually. Then the valves must be stroked and observed locally when performing the fail-safe test. Given the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel. To reduce the number of times that the test personnel are exposed to this hazard, the valves will be tested every refueling outage. It is important that the valves be tested when the valve body is at operating temperature to ensure that the actuator assembly functions properly. The main steam system operates at a nominal temperature of 555°F. Therefore, the exercise test will be performed either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage. Program change: The test interval was changed from every three months to every reactor refueling. These valves will be exercised closed every reactor refueling either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

Unit 2 Interval 4 RR Just	Unit 2 Interval 3 RR Just	Comments/Program Change
RRV-25		Check valves 2-SW-442 and 445 are on the discharge lines from the service water pumps to charging pumps and can be seated by pressure from the running pump in parallel with the non-running pump. However, there are check valves located upstream of 2-SW-442 and 445, and there are no vents or drains located between the check valves in series to collect leakage or to connect a pressure gauge. Therefore, with the current piping configuration the check valves cannot be verified to close and seat with flow. They will be disassembled and examined. Program change: The close test was added. Disassembly and examination will verify the close position.
RRV-26		Check valve 2-RH-047 is located downstream of the RHR heat exchanges on one of two parallel lines that come off a common header and discharge to the RCS cold legs. Just upstream is the motor operated isolation valve 2-RH-MOV-2720A. There are no vents or drains between the check valve and 2-RH-MOV-2720A. With the current piping configuration the upstream piping cannot be vented and leakage collected during a back pressure test on the check valve. Therefore, the valve will be disassembled and examined. Program change: The close test was added. Disassembly and examination will verify the close position.

Section 4.8 Alternative Testing for Non-Code Valves.

This section deals with valves that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code valves. Relief from Code provisions is not required for non-Code valves. However, cases where the Code provisions are not met are document in this section. The Code references were updated in this section.

Unit 2 Interval 4 Non-Code Alter Test	Unit 2 Interval 3 Non-Code Alter Test	Comments/Program Change
VNC-1	VNC-1	Instrument air valves 2-IA-395, 396 and 947 must close to ensure that bottled air is available to actuate the main valves (2-RC-PCV-2455C, 2-RC-PCV-2456, and 2-MS-SOV-202A and B). Valves 2-IA-381, 384 and 948 must open to allow bottled air to reach the main valves. Valves 2-IA-395, 396 and 947 will be tested open and valves 2-IA-381, 384 and 948 will be tested close by stroking the main valves with normal instrument air. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling. Program Change: The open test was added for valves 2-IA-395, 396 and 947, and the close test was added for valves 2-IA-381, 384 and 948, to be performed every refueling by stroking the main valves with normal instrument air.
VNC-2	VNC-3	Program change: None.
VNC-3	VNC-4	Program change: None.
VNC-4	VNC-5	The close position for the main steam non-return valves is verified by measuring the motor current while the stem travels to the valve disk as the plant cools down from power operation. Any increase in current will indicate a stuck disk. The equipment used to gather the data use to be called VOTES. Program change: The more generic term "diagnostic equipment" replaced "VOTES." Also, reference to the open position being verified by normal system operation was added, and the Code references were updated.
VNC-5		The main feedwater regulating valves 2-FW-FCV-2478, 2488 and 2498, and main feedwater bypass regulating valves 2-FW-FCV-255A, B and C, are valves used for system control and have a safety function to fail close. ISTC 1.2(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves. However, if these valves have a safety function to fail to an open of closed position, then the testing requirements for power-operated valves are imposed, which includes the measurement of stroke time. Code Case OMN-8 eliminates the stroke time requirements for control valves that only have a fail-safe function. Program Change: Non-Code Alternative Test VNC-5 was added to the IST program and eliminates the stroke time requirements for these control valve.

Unit 2 Interval 4 Non-Code Alter Test	Unit 2 Interval 3 Non-Code Alter Test	Comments/Program Change
VNC-6		VNC-6 pertains to the check valves on the diesel fuel oil pump discharge lines. The close test was added with disassembly and examination being the preferred method for verifying the close position. These valves can be disassembled and examined while the plant is operating. From a work planning standpoint, the worst time to schedule the removal of a diesel fuel oil supply train from service for the purpose of valve disassembly is during a refueling outage. Most major work activities can only be performed during the refueling outage. These activities are carefully planned to maximize the availability of safety related equipment and to preserve plant safety margin. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valves on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage. Because these valves are non-ASME Class valves, relief from disassembly during the refueling outage period is not required. Program change: Non-Code Alternative Test VNC-6 was added to the IST program. These valves will be disassembled and examined to verify the close position on an 18 month interval instead of during refueling outages.

Section 5.0 Reporting of Inservice Test Results

The Code references were updated.

ATTACHMENT 4

VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)

SURRY POWER STATION

UNIT 2

INSERVICE TESTING PROGRAM PLAN

FOR PUMPS AND VALVES

FOURTH INSPECTION INTERVAL

MAY 10, 2004 - MAY 10, 2014

REVISION 0

TABLE OF CONTENTS

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

1.0 INTRODUCTION

This Pump and Valve Inservice Test (IST) Program Plan is applicable to the Surry Power Station Unit 2 which received its construction permit on June 25, 1968 and began commercial operation on May 1, 1973. Surry Power Station Unit 2 is a Pressurized Water Reactor located in Surry County, Virginia. The plant employs a Westinghouse Electric Corp. Nuclear Steam System.

The IST Program Plan is comprised of two subprograms – the IST Program for Pumps and the IST Program for Valves. The development, implementation and administration of these programs are detailed in subsequent sections. This IST Program Plan applies to the fourth 10-year IST interval for Surry Power Station Unit 2, which starts on May 10, 2004 and ends May 10, 2014.

Surry Power Station requested an exemption from Section XI of the ASME Code to extend the Surry Unit 1 second 10-year IST interval for pumps and valves from December 22, 1992 to May 10, 1994 to coincide with the end of the second 10-year IST interval for Unit 2. This extension was granted in the form of an exemption to the Code of Federal Regulations, 10CFR50.55a(g)(4) per NRC, dated February 16, 1993. For IST, 10CFR50.55a(g) was subsequently replaced by 10CFR50.55a(f).

2.0 GENERAL PROGRAM DEVELOPMENT

The Code of Federal Regulations, paragraph 10CFR50.55a(f) describes the inservice testing requirements for pumps and valves which are classified as ASME Code Class 1, Class 2 and Class 3. Paragraph 10CFR50.55a(f)(4)(ii) states that,

> "Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed in paragraph (b) of this section."

The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 1997 Addenda, the 1998 Edition, the 1999 Addenda and the 2000 Addenda. The Code reference became effective on October 28, 2002 and applies to the fourth IST interval for Surry Unit 2. The IST Program for the fourth IST interval complies with these edition and addenda.

The ASME OM Code requires that the owner of each nuclear power plant prepare a "plan" for testing and inspection of systems and components under the jurisdiction of 10CFR50.55a. The Code, Subsection ISTA, General Requirements, Subsection ISTB, Inservice Testing of Pumps, and Subsection ISTC, Inservice Testing of Valves apply to the IST program. Subsections ISTA, ISTB and ISTC establish the IST program scope with the provision that the rules apply only to ASME Code Classes 1, 2 and 3 as stated by the NRC in the Code of Federal Regulations.

In accordance with ASME OM Code, the following are required to be included in the testing program:

1) Centrifugal and positive displacement pumps that are provided with an emergency power source and required to perform a specific function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

2) Active or passive valves (and their actuating and position indicating systems) which are required to perform a specific function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

3) Pressure relief devices that protect systems or portions of systems which perform a required function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition or mitigating the consequences of an accident.

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions including Generic Letter 89-04 and NUREG-1482. Other than these guides, there is no specific guidance for developing the IST Program scope of testing. Therefore, a set of rules was established by which the scope of the Surry ASME IST Program is determined including components that are to be included and the extent and type of testing required for each. Based on these rules, the philosophy and assumptions used in determining the test requirements for selected pumps and valves were documented.

2.1 PROGRAM SCOPE

In the course of developing the Program scope, each of the significant safety systems included within the ISI Class boundaries and certain safety systems outside of the ISI Class boundaries (such as the emergency diesel fuel oil transfer system) were evaluated with respect to the function of each component and the need for its operability as it relates to the scope of the ASME OM Code. Supporting documents used include,

Final Safety Analysis Report (FSAR),
Technical Specifications,
Past program correspondence,
Operating Procedures (normal, emergency and abnormal) and
Plant System Descriptions.

The sequence followed during the development effort was as follows:

1) Each of the plant systems was subjected to an overview to determine any potential active safety function as described in the scope statement. Those systems with no safety functions related to the ASME OM Code scope were excluded from further consideration. Plant documents as well as operating staff comments were utilized in this phase.

2) For the remaining systems, flow diagrams were studied and any component that could possibly have an active or passive safety function (other than simply maintaining the pressure boundary) was identified for further evaluation.

3) The function of each component identified from the flow diagrams was determined based on available documentation, staff review or general

experience of the evaluator. Testing requirements were derived based on the component function(s) and the applicable rule(s).

4) Available documents were reviewed and specific or implied component operational requirements were compared to the component functions.

5) The results of the steps described above were reviewed by several knowledgeable members of the plant staff and evaluated for accuracy and consistency, and compiled in an IST basis document. Based on this review, the final program scope was derived and the IST Program Plan developed.

2.2 PROGRAM UPDATE

During the fourth 10-year interval it is expected that the scope of the Program will occasionally be modified in response to unrelated activities including, but not limited to:

1) plant design changes,

2) changes in operating conditions (e.g. normal valve lineup) and

3) changes in accident mitigating procedures philosophy.

As a result, it is expected that the IST Program may be revised to ensure continued compliance with the Code requirements relating to the scope of the test program. The supervisor responsible for maintaining the IST Program is provided copies of all plant modifications that are designated by Engineering to have a potential IST/ISI impact. Should a change require a Program revision, the IST Coordinator would then implement the change to the Program Plan and the appropriate test procedure(s) in a timely manner.

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 2 Technical Specification 4.0.5 describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 pumps. The Surry Unit 2 Inservice Testing (IST) Program for Pumps has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTB and Technical Specifications.

The scope of the program includes ASME Code Class 1, 2 and 3, and certain non-Code class pumps that are required to perform a specific function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition or mitigating the consequences of an accident.

ISTB defines the rules and requirements of inservice testing of Code Class 1, 2, and 3 pumps and states that each pump to be tested by the rules of this subsection shall be identified by the owner and listed in the plant records.

The purpose of the IST Program Plan is to identify the pumps that are considered by Virginia Electric and Power (Dominion) Company as having a safety function and are therefore subject to the testing requirements of ISTB. The intent of the Code is to assess operational readiness and detect potentially adverse changes in the mechanical condition of these pumps. The relief requests for the IST Program Plan identify Code requirements considered to be impractical, provide technical basis for the request and propose alternate testing when warranted.

3.2 PROGRAM IMPLEMENTATION

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. The Surry Power Station Unit 2 IST Program provides a schedule for testing safety-grade pumps and is implemented as part of normal periodic surveillance testing.

Reference data is gathered during initial surveillance tests. With the ASME OM Code, these initial reference tests can be a preservice test as described in ISTB-3100 or the first inservice test as described in ISTB-3200. ISTB-3100 requires that at least five points along the pump curve be measured for pumps where the system resistance can be varied. ISTB-3200 refers to Group A tests, Group B tests and comprehensive tests. Group A tests apply to Group A pumps which are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. Group B tests apply to Group B pumps which are pumps in standby systems that are not operated routinely except for testing. Comprehensive tests apply to both Group A and B pumps and require more accurate pressure instrumentation (0.5% versus 2% for the Group A and B tests), but are performed on a less frequent basis.

The Group A test parameters include differential pressure (or discharge pressure for positive displacement pumps), flow rate, vibration and speed for variable speed pumps. The Group B test parameters include differential pressure for pumps other than positive displacement pumps, flow rate and speed for variable speed pumps. Differential pressure need not be measured for positive displacement pumps. The Group A and B test parameters are typically measured with normal plant Instrumentation. If practicable, the Group A and B reference tests shall be performed within ± 20% of the pump design flow rate. If not practicable, the reference test shall be performed at the highest practical flow rate. Comprehensive test parameters include differential pressure (or discharge pressure for positive displacement pumps), flow rate, vibration and speed for variable speed pumps. The comprehensive reference test shall be performed within ± 20% of the pump design flow rate. Any deviation from this requirement for comprehensive tests requires a request for relief from Code provisions.

Group A and B inservice tests shall be performed every three months as required by Table ISTB-3400-1. Any deviation from this test frequency requires a request for relief from Code provisions. During subsequent surveillance tests, flow rate is normally selected as the independent test parameter and is set to match the reference flow rate. Other hydraulic and mechanical performance parameters are measured and evaluated against the appropriate reference values. The results of such evaluations determine whether or not corrective action is warranted. Comprehensive tests are performed every two years in a manner similar to the Group A and B inservice tests.

Each pump in the IST Program is tested according to a detailed test procedure. The procedure includes, as a minimum:

1) <u>References</u>: This section identifies references applicable to Technical Specifications and other necessary material as drawings.

2) <u>Purpose</u>: This section identifies test objectives.

3) <u>Initial Conditions</u>: Each procedure should identify those independent actions or procedures which shall be completed and station conditions which shall exist prior to use.

4) Precautions: Precautions should be established to alert the individual performing the task to those situations in which important measures should be taken early or where extreme care should be used to protect equipment and personnel. Cautionary notes applicable to specific steps in the procedure should be included in the main body of the procedure as appropriate and should be identified as such.

5) Instructions: The main body of a procedure should contain step by step instructions in the degree of detail necessary for performing a required test.

6) Acceptance Criteria: The ranges within which test data are considered acceptable are established and included in the test procedure. In the event that data fall outside the acceptable range, operator action is governed by approved station procedures.

Finally, it is recognized that the IST Program for Pumps sets forth minimum testing requirements. Additional testing is performed, as required, after pump maintenance or as determined necessary by personnel at Surry Power Station.

3.3 PROGRAM ADMINISTRATION

The engineering staff at Surry is responsible for the administration of the IST Program for Pumps. The operations staff is responsible for performing the periodic tests as required by this program. The IST Program for Pumps is implemented by station periodic test procedures.

3.4 PUMP REFERENCE LIST

This list gives a brief description of each pump identified in the Pump Inservice Test Program.

1-CC-P-1C	Component Cooling Water Pumps
1-CC-P-1D	Drawing: 11448-CBM-72D, Sheet 1

Description: These centrifugal pumps supply cooling water to transfer heat from heat exchangers containing reactor coolant or other radioactive fluids. The component cooling water pumps operate routinely during normal operation and are defined as Group A pumps.

1-CH-P-2C	Boric Acid Transfer Pumps
1-CH-P-2D	Drawing: 11448-CBM-88A, Sheet 1

Description: These centrifugal pumps supply boric acid to the suction of the charging pumps for emergency boration. During normal operation they recirculate the contents of the Boron Injection Tank. The boric acid transfer pumps operate routinely during normal operation and are defined as Group A pumps.

2-CC-P-2A 2-CC-P-2B	Charging Pump Cooling Water Pumps Drawing: 11548-CBM-71B, Sheet 2

Description: These centrifugal pumps supply cooling water to transfer heat from the charging pump mechanical seals. The charging pump cooling water pumps operate routinely during normal operation and are defined as Group A pumps.

2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	High Head Safety Injection/Charging Pumps Drawing: 11548-CBM-88B, Sheet 2

Description: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system. The high head safety injection/charging pumps operate routinely during normal operation and are defined as Group A pumps.

2-CS-P-1A 2-CS-P-1B	Containment Spray Pumps Drawing: 11548-CBM-84A, Sheet 2

Description: These centrifugal pumps provide a cooled, chemically treated, borated spray to reduce containment pressure following a loss of coolant accident. The containment spray pumps are in a standby system and are defined as Group B pumps.

1-EE-P-1B 1-EE-P-1E	Emergency Diesel Generator Fuel Oil Transfer Pumps Drawing: 11448-FB-38A, Sheet 2

Description: These positive displacement pumps supply fuel oil to the emergency diesel generator fuel oil day tank which directly supplies the emergency diesel generator. The emergency diesel generator fuel oil pumps are in a standby system and are defined as Group B pumps.

2-FW-P-2 2-FW-P-3A 2-FW-P-3B	Auxiliary Feedwater Pumps Drawing: 11548-CBM-68A, Sheet 3

Description: These centrifugal pumps supply auxiliary feedwater to the steam generators following a loss of normal feedwater flow. The auxiliary feedwater pumps are in a standby system and are defined as Group B pumps.

2-RH-P-1A	Residual Heat Removal Pumps
2-RH-P-1B	Drawing: 11548-CBM-87A, Sheet 1

Description: These centrifugal pumps remove decay heat from the reactor core and the reactor coolant system during plant cool down. The residual heat removal pumps operate routinely during cold shutdowns and reactor refuelings and are defined as Group A pumps.

2-RS-P-1A	Inside Recirculation Spray Pumps
2-RS-P-1B	Drawing: 11548-CBM-84B, Sheet 1

Description: These vertical line shaft pumps supply a borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident. The inside recirculation spray pumps are in a standby system and are defined as Group B pumps. Also, the pump sumps are maintained dry. According to ISTB-3430, they require a comprehensive test at least once every two years. No quarterly testing is required. Because the pumps are inside containment, they will receive the comprehensive test during reactor refueling outages.

2-RS-P-2A	Outside Recirculation Spray Pumps
2-RS-P-2B	Drawing: 11548-CBM-84B, Sheet 2

Description: These vertical line shaft pumps supply borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident. The outside recirculation spray pumps are in a standby system and are defined as Group B pumps. Also, the pump sumps are maintained dry. According to ISTB-3430, they require a comprehensive test at least once every two years. No quarterly testing is required.

2-SI-P-1A	Low Head Safety Injection Pumps
2-SI-P-1B	Drawing: 11548-CBM-89A, Sheet 1

Description: These vertical line shaft pumps supply low pressure borated water to the reactor coolant system following a safety injection signal. The low head safety injection pumps are in a standby system and are defined as Group B pumps.

2-SW-P-10A	Charging Pump Service Water Pumps
2-SW-P-10B	Drawing: 11548-CBM-71B, Sheet 1

Description: These centrifugal pumps provide cooling water for Charging Pump Cooling Water Systems. The charging pump service water pumps operate routinely during normal operation and are defined as Group A pumps.

3.5 PUMP INSERVICE TEST TABLE

The Pump Inservice Test Table identifies the pumps to be tested, code classes, required test quantities and frequencies. Relief from test requirements is requested in cases where test requirements are determined to be impractical. Where relief is requested, technical justification is provided along with alternative test methods when applicable. Relief requests are contained in Section 3.6.

For non-Code pumps, a request for relief is not necessary when provisions of the Code are determined to be impractical. Section 3.7 contains a discussion of the testing requirements for non-Code pumps and descriptions of alternative testing in cases where the provisions of the Code are not met.

To aid the reader in interpreting the Pump Inservice Test Table, brief explanations of the table headings and abbreviations are provided below.

1) Pump Number - Each pump in the plant has a unique "mark" number that identifies the system to which the pump belongs.

2) Drawing and Sheet Number, Coordinate - The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.

3) ASME Class - ASME Code Class of each pump as per 10CFR50.55a and Regulatory Guide 1.26.

Note: NC is for non-Code pumps. These pumps are important to safety but are not in systems that are classified ASME Class 1, 2 or 3.

4) ISTB Group - Pump group as defined in ISTB-2000 where:

Group A pumps - pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations and

Group B pumps - pumps in standby systems that are not operated routinely except for testing.

5) Flow Path - The flow path used for the test can either be the normal flow path for the system, a recirculation flow path or a flow path dedicated to testing.

6) System Resist - Either FIXED for a test loop with a fixed system resistance or VARIABLE for a test loop with a system resistance that can be varied.

7) Test Type - The required ISTB test quantities. Test types with "C_" as a prefix represent comprehensive tests that are conducted every 24 months. Test types without the prefix "C_" represent either Group A or B tests that are conducted every three months unless the test frequency has been deferred to cold shutdown or reactor refueling by a relief request. Examples of test type abbreviations are given below.

DEV_HEAD - developed pump head

DIFF_PRESSURE - differential pressure

DISCH_PRESSURE - discharge pressure

FLOW - flow

FLOW_TOTAL - flow total is the sum of branch flows

PUMP_SPEED - pump speed for variable speed pumps

VIB_(suffix) - vibration measured at a given bearing (e.g., IN for inboard bearing) and in a given orientation (e.g., HORZ for the horizontal direction)

8) Test Freq - The test frequency with the following abbreviations:

03 - the test will be performed every three months (Group A and B pump tests shall be performed every three months as required by Table ISTB-3400-1.)

CS - the test will be performed every cold shutdown (a relief request explains the need for deviating from Table ISTB-3400-1 test frequency requirements)

RR - the test will be performed every reactor refueling (a relief request explains the need for deviating from Table ISTB-3400-1 test frequency requirements)

24 - the test will be performed every 24 months (pumps with sumps that are maintained dry shall only have a comprehensive test performed every 2 years per ISTB-3430).

9) Ref Flow Status – ISTB-3300 requires that the reference flow rate be within 20% of pump design flow. The reference flow rate is the flow rate used to establish acceptance criteria. FULL (full flow) in this column indicates that the reference flow rate is within 20% of pump design flow. If the reference flow rate does not meet this requirement a note is provided at the end of the pump table with an explanation.

For Group A and B tests, ISTB-3300(e)(2) allows for testing outside the 20% range due to impracticality. For comprehensive tests, ISTB-3300(e)(1) requires that the tests to be performed within the 20% range with no exceptions. Therefore, relief from Code provisions is required when testing outside the 20% range for comprehensive tests.

10) Relief Request - Relief requests are presented in Section 3.6.

11) Non-Code Alter Test - Non-Code alternative tests apply to pumps that are not ASME Code class 1, 2 or 3. These tests are alternatives to Code tests and are described in Section 3.7.

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CC-P-1C	11448-CBM-072D	1 OF 5	D5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		3	
								C_FLOW_TOTAL	24	FULL	3	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03		3	
								FLOW_TOTAL	03	NOTE 1	3	
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03		1	
								VIB_OUT_HORZ	03		1	
								VIB_OUT_VERT	03		1	
	COMPONENT COOLING WATER CENTRIFUGAL PUMP											
1-CC-P-1D	11448-CBM-072D	1 OF 5	C5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		3	
								C_FLOW_TOTAL	24	FULL	3	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03		3	
								FLOW_TOTAL	03	NOTE 1	3	
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03		1	
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	COMPONENT COOLING WATER CENTRIFUGAL PUMP											

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CH-P-2C	11448-CBM-088A	1 OF 4	B7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03		4	
								FLOW	03	FULL		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
	BORIC ACID TRANSFER CENTRIFUGAL PUMP											
1-CH-P-2D	11448-CBM-088A	1 OF 4	B6	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								DIFF_PRESSURE	03		4	
								FLOW	03	FULL		
								VIB_IN_AX	03		1	
								VIB_IN_HORZ	03		1	
								VIB_IN_VERT	03		1	
	BORIC ACID TRANSFER CENTRIFUGAL PUMP											
1-EE-P-1B	11448-FB-038A	2 OF 3	C7	NC	B	NORMAL	FIXED	C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1
								C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE											
DISPLACEMENT PUMP												
1-EE-P-1E	11448-FB-038A	2 OF 3		NC	B	NORMAL		C_DISCH_PRESS	24			1
								C_FLOW	24	FULL		1

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-EE-P-1E	11448-FB-038A	2 OF 3		NC	B	NORMAL		C_VIB_IN_AX	24			1
								C_VIB_IN_HORZ	24			1
								C_VIB_IN_VERT	24			1
								DISCH_PRESSURE	03			1
								FLOW	03	FULL		1
	EMERGENCY DIESEL GENERATOR FUEL OIL TRANSFER POSITIVE											
DISPLACEMENT PUMP												
2-CC-P-2A	11548-CBM-071B	2 OF 2	C7	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03		5	
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL											
2-CC-P-2B	11548-CBM-071B	2 OF 2	C3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03		5	
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03			
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL											
2-CH-P-1A	11548-CBM-088B	2 OF 2	C8	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
2-CH-P-1A	11548-CBM-088B	2 OF 2	C8	2	A	NORMAL	VARIABLE	C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
2-CH-P-1B	11548-CBM-088B	2 OF 2	C6	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03			
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
2-CH-P-1C	11548-CBM-088B	2 OF 2	C4	2	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_SUCTION_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
2-CH-P-1C	11548-CBM-088B	2 OF 2	C4	2	A	NORMAL	VARIABLE	C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								SUCTION_FLOW	03	NOTE 2		
								VIB_IN_AX	03			
								VIB_IN_HORZ	03			
								VIB_IN_VERT	03			
								VIB_OUT_AX	03		1	
								VIB_OUT_HORZ	03			
								VIB_OUT_VERT	03			
	HIGH HEAD SAFETY INJECTION/CHARGING CENTRIFUGAL PUMP											
2-CS-P-1A	11548-CBM-084A	2 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_TOTAL_FLOW	24	NOTE 3	6	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								TOTAL_FLOW	03	NOTE 3		
	CONTAINMENT SPRAY PUMP											
2-CS-P-1B	11548-CBM-084A	2 OF 3	B5	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_TOTAL_FLOW	24	NOTE 3	6	
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								TOTAL_FLOW	03	NOTE 3		

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
	CONTAINMENT SPRAY PUMP											
2-FW-P-2	11548-CBM-068A	3 OF 4	B8	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_PUMP_SPEED	24			
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								PUMP_SPEED	03			
	AUXILIARY FEEDWATER STEAM DRIVEN CENTRIFUGAL PUMP											
2-FW-P-3A	11548-CBM-068A	3 OF 4	B6	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
	AUXILIARY FEEDWATER MOTOR DRIVEN CENTRIFUGAL PUMP											
2-FW-P-3B	11548-CBM-068A	3 OF 4	B5	3	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_IN_AX	24			
								C_VIB_IN_HORZ	24			
								C_VIB_IN_VERT	24			
								C_VIB_OUT_AX	24			
								C_VIB_OUT_HORZ	24			
								C_VIB_OUT_VERT	24			

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
2-FW-P-3B	11548-CBM-068A	3 OF 4	B5	3	B	RECIRC	VARIABLE	DIFF_PRESSURE	03			
								FLOW	03	FULL		
	AUXILIARY FEEDWATER MOTOR DRIVEN CENTRIFUGAL PUMP											
2-RH-P-1A	11548-CBM-087A	1 OF 2	D7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	CS		2	
								FLOW	CS	FULL	2	
								VIB_UP_MTR_AX	CS			
								VIB_UP_MTR_HORZ	CS			
								VIB_UP_MTR_VERT	CS			
	RESIDUAL HEAT REMOVAL PUMP											
2-RH-P-1B	11548-CBM-087A	1 OF 2	D4	2	A	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	CS		2	
								FLOW	CS	FULL	2	
								VIB_UP_MTR_AX	CS			
								VIB_UP_MTR_HORZ	CS			
								VIB_UP_MTR_VERT	CS			
	RESIDUAL HEAT REMOVAL PUMP											
2-RS-P-1A	11548-CBM-084B	1 OF 2	B7	2	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	INSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
2-RS-P-1B	11548-CBM-084B	1 OF 2	B4	2	B	RECIRC	VARIABLE	C_DIFF_PRESS	24			

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
2-RS-P-1B	11548-CBM-084B	1 OF 2	B4	2	B	RECIRC	VARIABLE	C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	INSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
2-RS-P-2A	11548-CBM-084B	2 OF 2	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	NOTE 4	7	
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	OUTSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
2-RS-P-2B	11548-CBM-084B	2 OF 2	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	NOTE 4	7	
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
	OUTSIDE RECIRCULATION SPRAY VERTICAL LINE SHAFT PUMP											
2-SI-P-1A	11548-CBM-089A	1 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	NOTE 5		
	LOW HEAD SAFETY INJECTION VERTICAL LINE SHAFT PUMP											
2-SI-P-1B	11548-CBM-089A	1 OF 3	C6	2	B	RECIRC	FIXED	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	NOTE 5		

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
	LOW HEAD SAFETY INJECTION VERTICAL LINE SHAFT PUMP											
2-SW-P-10A	11548-CBM-071B	1 OF 2	B8	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	SERVICE WATER TO CHARGING PUMP CENTRIFUGAL PUMP											
2-SW-P-10B	11548-CBM-071B	1 OF 2	B3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24			
								C_FLOW	24	FULL		
								C_VIB_UPMTR_AX	24			
								C_VIB_UPMTR_HOR	24			
								C_VIB_UPMTR_VER	24			
								DIFF_PRESSURE	03			
								FLOW	03	FULL		
								VIB_UP_MTR_AX	03		1	
								VIB_UP_MTR_HORZ	03			
								VIB_UP_MTR_VERT	03			
	SERVICE WATER TO CHARGING PUMP CENTRIFUGAL PUMP											

PUMP INSERVICE TEST TABLE NOTES

Note 1 - As described in Relief Request P-3, pumps 1-CC-P-1C and D are tested over a range of flows every three months. The lower end of this range is less than 20% of pump design flow. However, to minimize system perturbations, the range will not be changed to accommodate the 20% of design flow.

Note 2 - The normal charging flow path is the only flow path available for Group A tests that are performed every three months for pumps 2-CH-P-1A, B and C. Flow within 20% of pump design flow cannot be achieved with this flow path.

Note 3- As described in Relief Request P-6 a flow within 20% of pump design flow cannot be achieved with the only available test loop for containment spray pumps 2-CS-P-1A and B.

Note 4 - As described in Relief Request P-7, a flow within 20% of pump design flow cannot be achieved with the only available test loop for outside recirculation spray pumps 2-RS-P-2A and B.

Note 5 - The low head safety injection recirculation flow path is the only flow path available for Group B tests that are performed every three months for pumps 2-SI-P-1A and B. Flow within 20% of pump design flow cannot be achieved with this flow path.

3.6 PUMP TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements that are impractical for Surry Unit 2 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of the code requirements is proposed.

RELIEF REQUEST P-1

Systems: Refer to Table P-1

Pump(s): Refer to Table P-1

Group: Refer to Table P-1

Class: Refer to Table P-1

Function: Various

ISTB Code Requirements for Which Relief Is Requested

ISTB-3300, requires that reference values be determined from the results of preservice testing or from the results of the first inservice test. This request applies only to vibration testing.

Basis for Relief (ISTB-3300)

The pumps listed in Table P-1 have at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips). Small values for V_r produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5100-1, ISTB-5200-1, ISTB-5300-1 and ISTB-5300-2 as less than or equal to $2.5V_r$. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action.

For very small reference values, hydraulic noise and instrument error can be a significant portion of the reading and affect the repeatability of subsequent measurements. Also, experience gathered from the Surry preventive maintenance program has shown that changes in vibration levels in the range of 0.05 ips do not normally indicate significant degradation in pump performance.

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1 where the measured reference value is less than 0.05 ips.

When new reference values are established per ISTB-3310, ISTB-3320 or ISTB-6200(c), the measured parameters will be evaluated for each location to determine if the provisions of this relief request still apply. If the measured V_r is greater than 0.05

ips, the requirements of ISTB-3300 will be applied even if the pump is listed in Table P-1. Conversely, if the measured V_r is less than 0.05 ips, a minimum value of 0.05 ips will be used for V_r even if the pump is not currently listed in Table P-1.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Surry Predictive Maintenance Program. The Surry Predictive Maintenance Program currently employs predictive monitoring techniques such as:

vibration monitoring and analysis beyond that required by ISTB,
bearing temperature trending,
oil sampling and analysis, and
thermography analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

increased monitoring to establish rate of change,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300 provides an acceptable level of quality and safety.

Alternate Testing Proposed

Pumps with a measured reference value below 0.05 ips for a particular vibration measurement location shall have subsequent test results for that location compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-1 (Cont.)

Table P-1

Pump Number	System	Code Class	OM Group	Description
1-CC-P-1C 1-CC-P-1D	Component Cooling	3	A	Component Cooling Water Pump
1-CH-P-2D	Chemical and Volume Control	2	A	Boric Acid Transfer Pump
2-CC-P-2A	Component Cooling	3	A	Charging Pump Cooling Water Pump
2-CH-P-1C	Chemical and Volume Control	2	A	High Head Safety Injection/Charging Pumps
2-SW-P-10A 2-SW-P-10B	Service Water	3	A	Charging Pump Service Water Pumps

RELIEF REQUEST P-2

Systems: Residual Heat Removal

Pump(s): 2-RH-P-1A
2-RH-P-1B

Group: A

Class: 2

Function: The residual heat removal pumps remove decay heat from the reactor core and the reactor coolant system during plant cool down.

ISTB Code Requirements for Which Relief Is Requested

Table ISTB-3400-1, requires an inservice test be run on each Group A pump nominally every 3 months.

Basis for Relief (Table ISTB-3400-1)

The residual heat removal pumps are located inside containment and are inaccessible during normal operation. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 490 psig. Therefore, testing the residual heat removal pumps during normal operation is not practical.

Alternate Testing Proposed

These pumps will be tested every cold shutdown but not more frequently than once every three months.

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-3400-1identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-3

System : Component Cooling

Pump(s): 1-CC-P-1C
1-CC-P-1D

Group: A

Class: 3

Function: The component cooling water pumps supply cooling water to transfer heat from heat exchangers containing reactor coolant or other radioactive fluids.

ISTB Code Requirements for Which Relief Is Requested

ISTB-5121 requires that "Group A tests shall be conducted with the pump operating at a specified reference point."

ISTB-5123 requires that "Comprehensive tests shall be conducted with the pump operating at a specified reference point."

Basis for Relief (ISTB-5121 and ISTB-5123)

During testing of the component cooling water pumps, flow is adjusted to the reference flow rate using an 18 inch butterfly valve. The butterfly valve is a crude throttling device and does not provide the fine tuning that is required to duplicate the reference flow rate from test to test. Consequently, throttling to the same reference flow rate during each test is not practical.

Alternate Testing Proposed

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-9, "Use of a Pump Curve for Testing" will be followed. This alternative to the requirements of ISTB-5121 and ISTB-5123 provides an acceptable level of quality and safety.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5121 and ISTB-5123 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-4

System : Chemical and Volume Control

Pump(s): 1-CH-P-2C
1-CH-P-2D

Group: A

Class: 2

Function: The boric acid transfer pumps supply boric acid to the suction of the charging pumps for emergency boration.

ISTB Code Requirements for Which Relief Is Requested

Table ISTB-3500-1 requires that Group A test pressure instrument accuracy shall be within ± 2%.

ISTB-3510(b)(1) requires that the full-scale range of each analog instrument shall be not greater than three times the reference value.

Basis for Relief (Table ISTB-3500-1)

Calibrating the inlet pressure instruments for the boric acid transfer pumps to an accuracy within ± 2% has proven difficult and may be impractical in the future with the current instruments. Calibrating the inlet pressure instruments to an accuracy within ± 3% would be practical.

Basis for Relief (ISTB-3510(b)(1))

The inlet pressure gauges have a full scale range of 0 to 15 psig. These instruments were sized by evaluating the static pressures present at the suction side of the pumps and applying the three times rule of ISTB-3510(b)(1). The static pressures range from 6 to 7 psig.

When the pumps are started, the pressure at the suction side of the pumps drops to approximately 2 psig; therefore, the inlet pressure gauges do not meet the three times rule for dynamic inlet pressure.

Using a lower range pressure gauge (i.e. 0 to 5 psig) would meet the three times rule for dynamic inlet pressure; however, the lower range gauge would be repeatedly exposed to an over range condition (static pressures in excess of 5 psig) which would damage the instruments.

Using a lower range temporary gauge on a quarterly basis presents a hardship because the process fluid contains boric acid and is contaminated. If contaminated, the temporary instruments would probably become waste material. However, with the current 0 to 15 psig inlet pressure gauges calibrated to $\pm$ 3%, a differential pressure can be determined that exceeds the accuracy requirements for differential pressure.

Each boric acid transfer pump discharge pressure gauge (0 to 150 psig range) has an instrument loop accuracy of 1.59%. Computing the maximum error for differential pressure using the current instrument configuration and an inlet pressure gauge accuracy of $\pm$ 3%, yields an error of 2.85 psid.

Computing the Code allowed error for differential pressure for an inlet pressure gauge with a 2% accuracy and a 0 to 5 psig range and a discharge pressure instrument with a 2% accuracy and a 0 to 150 psig range yields an error of 3.1 psid. With the current instrument configuration, the loop accuracy of each discharge pressure instrument could be as high as 1.75%, which equates to a 3.075 psid error, and still be within the Code allowed error of 3.1 psid for differential pressure. Therefore, for purposes of trending pump degradation using differential pressure and flow, the current instrument is adequate as long as the discharge pressure instrument loop accuracies remain at or below 1.75%.

Alternate Testing Proposed

The inlet pressure gauges with a full scale range of 0 to 15 psig and calibrated to an accuracy within $\pm$ 3%, will be used to measure dynamic inlet pressures. Also, the loop accuracies for the discharge pressure gauges will be maintained at or below an accuracy of 1.75% to ensure that the differential pressure error is below the differential pressure error allowed by the Code.

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-3500-1 and ISTB-3510(b)(1) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-5

System : Component Cooling Water

Pump(s): 2-CC-P-2A
2-CC-P-2B

Group: A

Class: 3

Function: The charging pump cooling water pumps supply cooling water to transfer heat from the charging pump mechanical seals.

ISTB Code Requirements for Which Relief Is Requested

ISTB-3510(b)(1) requires that the full-scale range of each analog instrument shall be not greater than three times the reference value.

Basis for Relief (ISTB-3510(b)(1))

Recently installed inlet pressure gauges have a full scale range of 0 to 3.5 psig. Readings from these inlet pressure gauges over the past year indicate that the dynamic pressures fall within the bottom third of full scale. However, the difference in the error between the 0 to 3.5 psig gauges and gauges that would meet the three times full-scale rule are so small that the 0 to 3.5 psig gauges can be considered to be equivalent in terms of accuracy for determining differential pressure.

For example, inlet pressures as low as 0.5 psig have been recorded for pump 2-CC-P-2B. A gauge that meets the three times full-scale rule would have a full scale of 1.5 psig or less. A 2% accuracy for the 1.5 psig gauge translates to an error of 0.03 psig. A 2% accuracy for the 3.5 psig gauge translates to an error of 0.07 psig. The difference in error of 0.04 psig is insignificant when determining the differential pressures for these pumps that range between 50 and 60 psig. Therefore, the two gauges can be considered to be equivalent in terms of accuracy for determining differential pressure.

Alternate Testing Proposed

Inlet pressure will be measured with gauges that have a full-scale of 0 to 3.5 psig.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3510(b)(1) identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

RELIEF REQUEST P-6

System: Containment Spray

Pump(s): 2-CS-P-1A
2-CS-P-1B

Group: B

Class: 2

Function: The containment spray pumps provide a cooled, chemically treated, borated spray to reduce containment pressure following a loss of coolant accident.

ISTB Code Requirements for Which Relief Is Requested

ISTB-3300(e)(1) (Reference Values) requires that reference values shall be established within ±20% of pump design flow rate for comprehensive tests.

ISTB-5110(a) (Preservice Testing) requires that, "In systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow."

Basis for Relief (ISTB-3300(e)(1))

The test loop for the containment spray pumps consists of an 8" pump discharge line feeding into a 4" recirculation line which connects to a 6" header that discharges to the reactor water storage tank (RWST). Refer to Figure P-8.1. The containment spray pumps take suction from the RWST. With this test loop, pump design flow cannot be established. Also, the discharge piping was not designed to be temporarily reconfigured so that pump design flow could be achieved.

During the construction period, the containment spray headers were fitted with blind flanges that allowed the connection of temporary drain lines for initial testing of the subsystem. After the subsystem was completely installed, temporary connections were made to the blind flanges on the spray headers, and pipe plugs were placed in the spray nozzle sockets. The containment spray pumps were started and operated over a range of flows, circulating water through the spray header supply lines to the spray headers and out the temporary drain connections. This provided a full-system capability test to ensure that the system met the flow requirements. It also provided for a flush of the system to remove any particulate matter that could plug the spray nozzles at a future time. At the completion of this test, the temporary drain connections were removed, the blind flanges replaced, the pipe plugs removed, the nozzle pipe nipple inspected, and the spray nozzles installed.

Re-establishing this test loop for the purpose of periodic testing would require plant modifications and is not practicable. The spray headers are inaccessible without a significant amount of scaffolding. Even if the nozzles were accessible, the plugging of 234 spray nozzles, running the flow test and returning the system to its operable configuration present substantial challenges in terms of complexity of the temporary modifications, labor intensive nature of the modifications, and controls and post modification testing needed to ensure that the system is returned to the original configuration.

To be within 20% of the pump design flow of 3200 gpm requires a reference flow of 2560 gpm. For the reasons stated above, reference flows are typically established near 1600 gpm, which is not within 20% of design flow. As an alternative to testing within 20% of the design flow, the reference values will be established to within approximately 50% of the design flow or approximately 1600 gpm. It is our understanding that testing at design flow is important for pumps with characteristic head-flow curves that are flat or gently sloping in the low flow region (little change in developed head with increasing flow). In the low flow region, increasing internal flows, usually due to wear, are difficult if not impossible to detect. Pumps with the "flat" curves at low flows should be tested at near design conditions to determine if increasing internal recirculation flows have degraded pump performance to the point where design requirements cannot be met. This situation does not apply to the containment spray pumps if they are tested to within 50% of design flow. Testing at the reference flows will detect pump degradation because the pump curve is well sloped at the point of testing. Figure P-8.2 shows the nominal vendor pump curve for 1-CS-P-1A along with the reference test point, and Figure P-8.3 shows the same information for 1-CS-P-1B.

In addition to the testing described above, the outside recirculation pumps are included in the Surry Predictive Maintenance Program. For the containment spray pumps, this program employs predictive monitoring techniques, such as vibration monitoring and analysis beyond that required by ISTB, and oil sampling and analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

monitor additional parameters,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

Basis for Relief (ISTB-5110(a))

With the restrictions described above, the highest flow that can be measured while maintaining stable test conditions is approximately 50% of design flow. Measuring more than one point on the pump curve is limited to flow rates less than the reference flows of approximately 1600 gpm. Throttling the flow down to 20% of design flow will provide one more point on the curve.

Near 1600 gpm, the head curve is not flat, but well sloped as shown in Figure P-6.2 and Figure P-6.3 for pumps 2-CS-P-1A and 2-CS-P-1B, respectively. Therefore, as performance degrades due to internal recirculation caused by increasing internal pump clearances, the differential pressure will measurably decrease for a given reference flow rate. As discussed above, testing the containment spray pumps over the full range of the pump curve and measuring at least five points along the curve is impractical.

As an alternative to measuring at least five points for the preservice test, two points will be measured at approximately 20% and 50% of design flow. The proposed alternative to ISTB-5110(a) provides an acceptable level of quality and safety.

Alternate Testing Proposed

Comprehensive test reference flows will be established to within approximately 50% of pump design flow. Preservice tests will be conducted using two points on the pump curve at approximately 20% and 50% of pump design flow.

The containment spray pumps will be subject to additional testing, trending and diagnostic analysis of the Surry Predictive Maintenance Program.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) and ISTB-5110(a) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

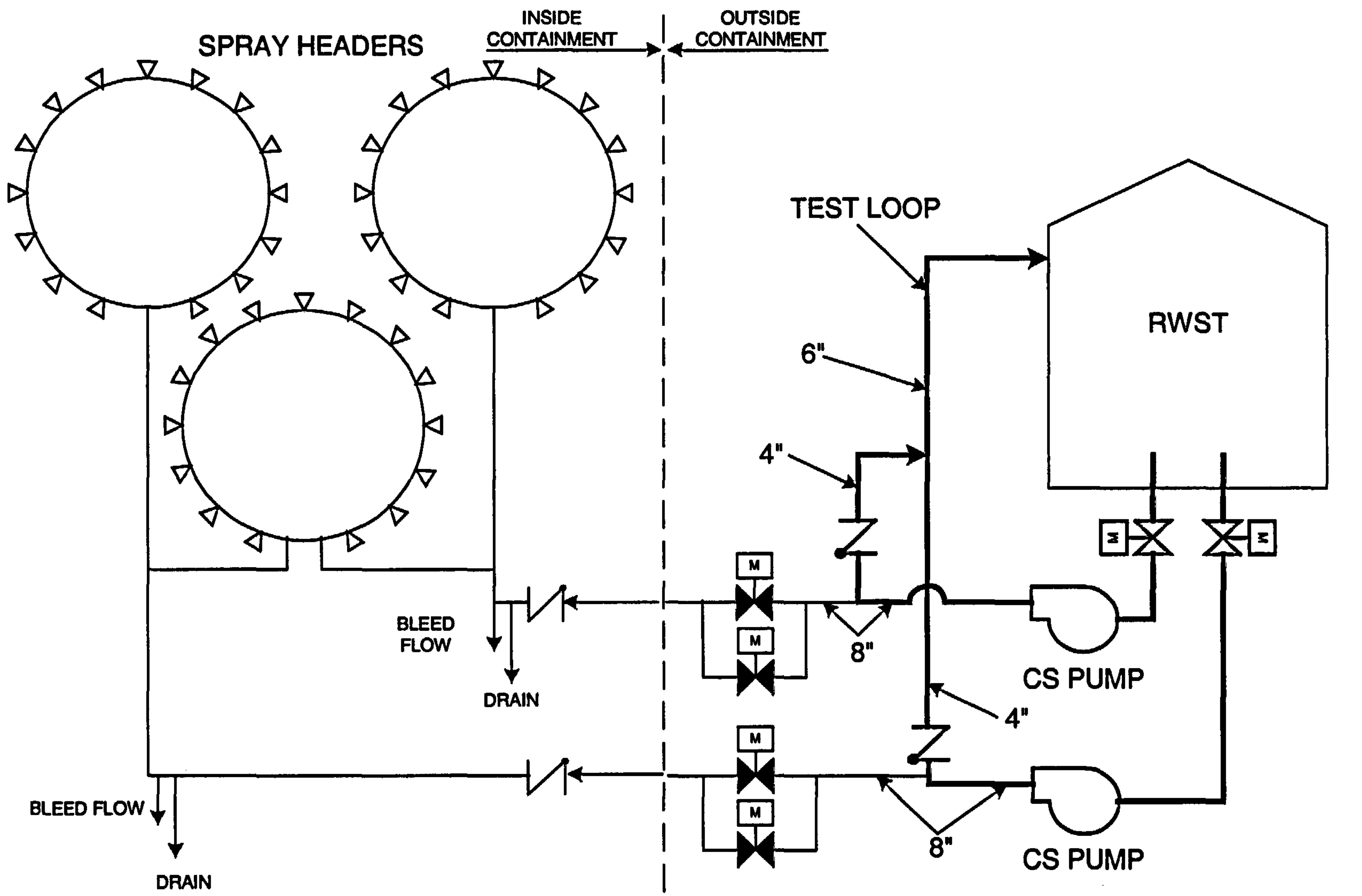
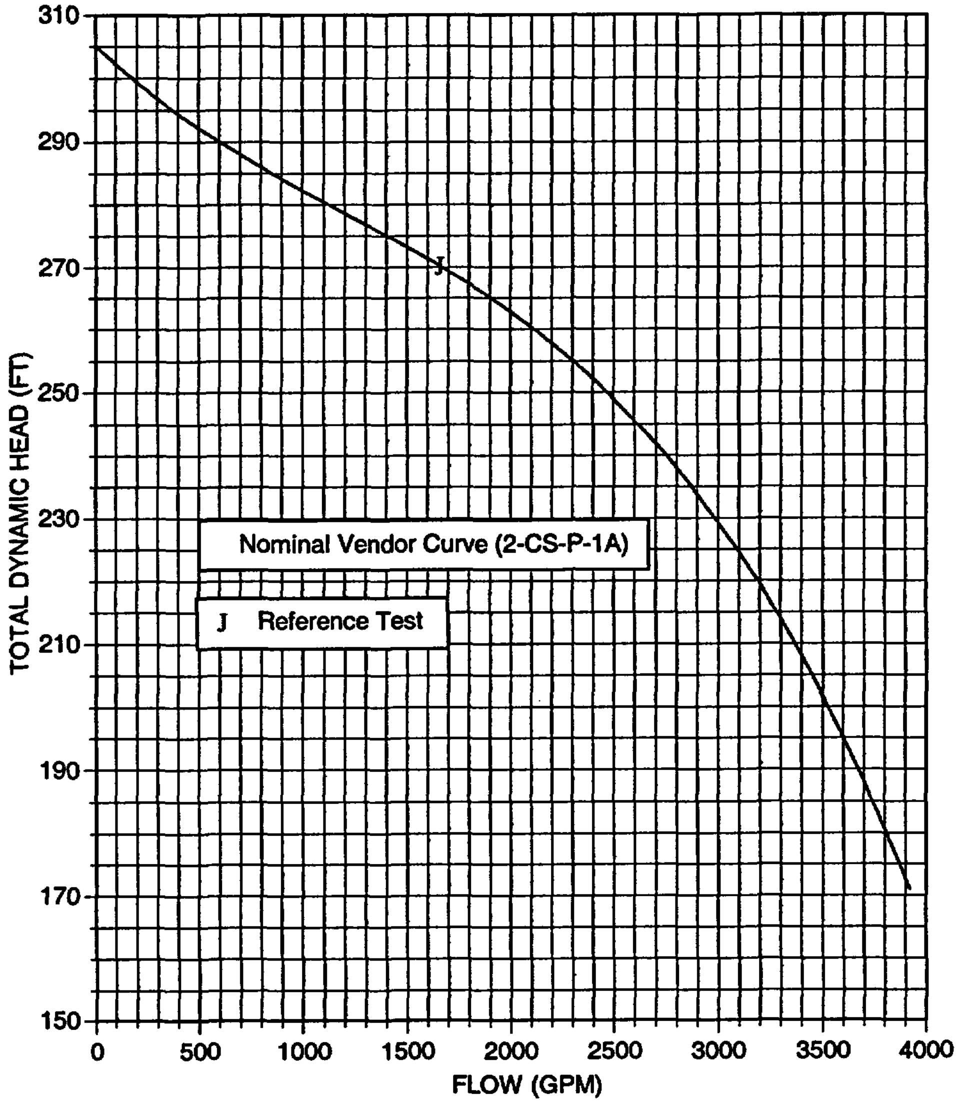

SPRAY HEADERS
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
TEST LOOP
6"
4"
RWST
BLEED FLOW
DRAIN
M
8"
CS PUMP
4"
BLEED FLOW
DRAIN
8"
CS PUMP

Figure P-6.4



310
290
270
250
230
210
190
170
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
FLOW (GPM)
Nominal Vendor Curve (2-CS-P-1A)
J Reference Test
J

Figure P-6.5

Relief Request P-6 (Cont.)

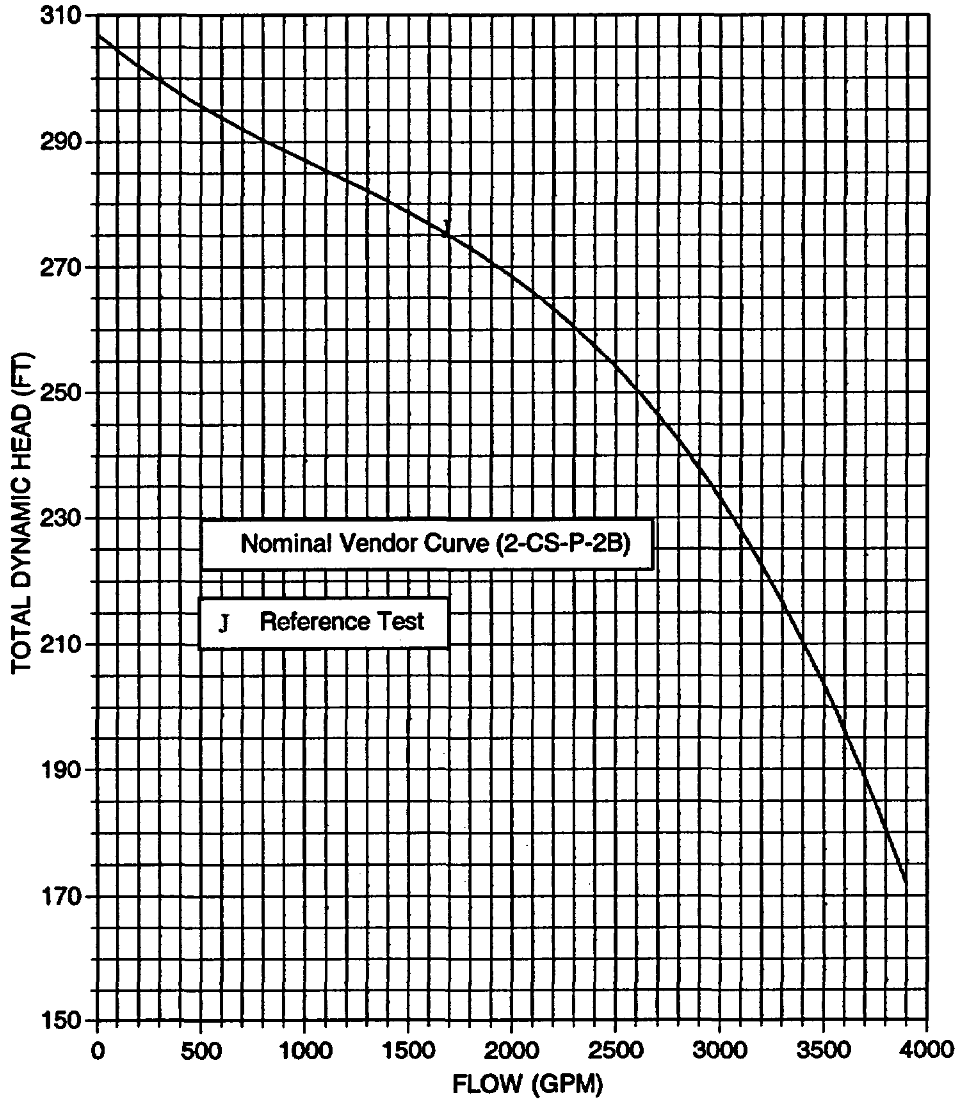


Figure P-6.6

RELIEF REQUEST P-7

System: Recirculation Spray

Pump(s): 2-RS-P-2A
2-RS-P-2B

Group: B

Class: 2

Function: The outside recirculation spray pumps supply borated spray to cool and depressurize the containment atmosphere following a containment depressurization actuation signal and maintain containment subatmospheric following an accident.

<u>ISTB Code Requirements for Which Relief Is Requested</u>

ISTB-3300(e)(1) (Reference Values) requires that reference values shall be established within $\pm$20% of pump design flow rate for comprehensive tests.

ISTB-5210(a) (Preservice Testing) requires that, "In systems where resistance can be varied, flow rate and differential pressure shall be measured at a minimum of 5 points. If practicable, these points shall be from pump minimum flow to at least pump design flow."

<u>Basis for Relief (ISTB-3300(e)(1))</u>

The outside recirculation pumps are long shaft pumps with the shaft and impeller enclosed in a 52 foot casing. The pump impellers are located near the bottom of the casing. The test loop for the outside recirculation pumps consists of a 10" pump discharge line feeding into a 4" recirculation line which feeds back to the pump casing. Refer to Figure P-7.1. With this test loop, pump design flow cannot be established. Reference flows are typically established with this test loop in the range of 1100 gpm, whereas the pump required flow is 3000 gpm. The low reference flows result from restrictions due to the small 4" recirculation line and the limited volume of water in the test loop. The limited water volume results in a rapid temperature rise in the test loop due to heat loads added by the running pump. This temperature rise affects repeatability of the measured hydraulic parameters. Therefore, care must be taken to ensure that the pump run time is limited and that the flow rate is maintained within an optimal range.

The discharge piping was not designed to be temporarily reconfigured so that pump design flow could be achieved. Pre-operational testing consisted of a shutoff head verification test and a flow test through the existing 4 inch test loop. Flow was not established to the spray headers.

To be within 20% of the pump design flow of 3000 gpm requires a reference flow of 2400 gpm. For the reasons stated above, reference flows are typically established in the range of 1100 gpm, which is not within 20% of design flow. As an alternative to testing within 20% of the design flow, the reference values will be established to within approximately 64% of design flow or approximately 1100 gpm. It is our understanding that testing at design flow is important for pumps with characteristic head-flow curves that are flat or gently sloping in the low flow region (little change in developed head with increasing flow). In the low flow region, increasing internal flows, usually due to wear, are difficult if not impossible to detect. Pumps with the "flat" curves at low flows should be tested at near design conditions to determine if increasing internal recirculation flows have degraded pump performance to the point where design requirements cannot be met. This situation does not apply to the outside recirculation pumps if they are tested to within 64% of design flow. Testing at the reference flows will detect pump degradation because the pump curve is well sloped at the point of testing. Figure P-9.2 shows nominal vendor pump curve for 2-RS-P-2A along with the reference test point, and Figure P-7.3 shows the same information for 2-RS-P-2B.

In addition to the testing described above, the outside recirculation pumps are included in the Surry Predictive Maintenance Program. For the outside recirculation spray pumps, this program employs predictive monitoring techniques, such as vibration monitoring and analysis beyond that required by ISTB, and oil sampling and analysis.

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

monitor additional parameters,
review of component specific information to identify cause, and
removal of the pump from service to perform maintenance.

The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

Basis for Relief (ISTB-5210(a))

With the restrictions described above, the highest flow that can be measured while maintaining stable test conditions is approximately 36% (within 64%) of design flow. Measuring more than one point on the pump curve is limited to flow rates less than the 1100 gpm range. Throttling the flow down to 20% of design flow to measure another point on the pump curve may cause flashing across the throttle valve which would cause hydraulic instabilities given the limited test volume, and provide questionable test results. In the 1100 gpm range of the head curve for these pumps, the head curve is not flat, but well sloped, as shown in Figures P-7.2 and P-7.3. Therefore, as performance degrades due to internal recirculation caused by increasing internal pump clearances, the differential pressure will measurably decrease for a given reference flow rate. As discussed above, testing the outside recirculation spray pumps over the full range of the pump curve and measuring at least five points along the curve is impractical.

As an alternative to measuring at least five points for the preservice test, one point will be measured to within approximately 64% of design flow. The proposed alternative to ISTB-5210(a) provides an acceptable level of quality and safety.

Alternate Testing Proposed

Comprehensive test reference flows will be established to within approximately 64% of pump design flow. Preservice tests will be conducted using one point on the pump curve to within approximately 64% of pump design flow.

The outside recirculation spray pumps will be subject to additional testing, trending and diagnostic analysis of the Surry Predictive Maintenance Program.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) and ISTB-5210(a) identified above, which have been identified to be impractical, will provide adequate indication of pump performance. Therefore, pursuant to 10 CFR 50.55a(f)(6)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

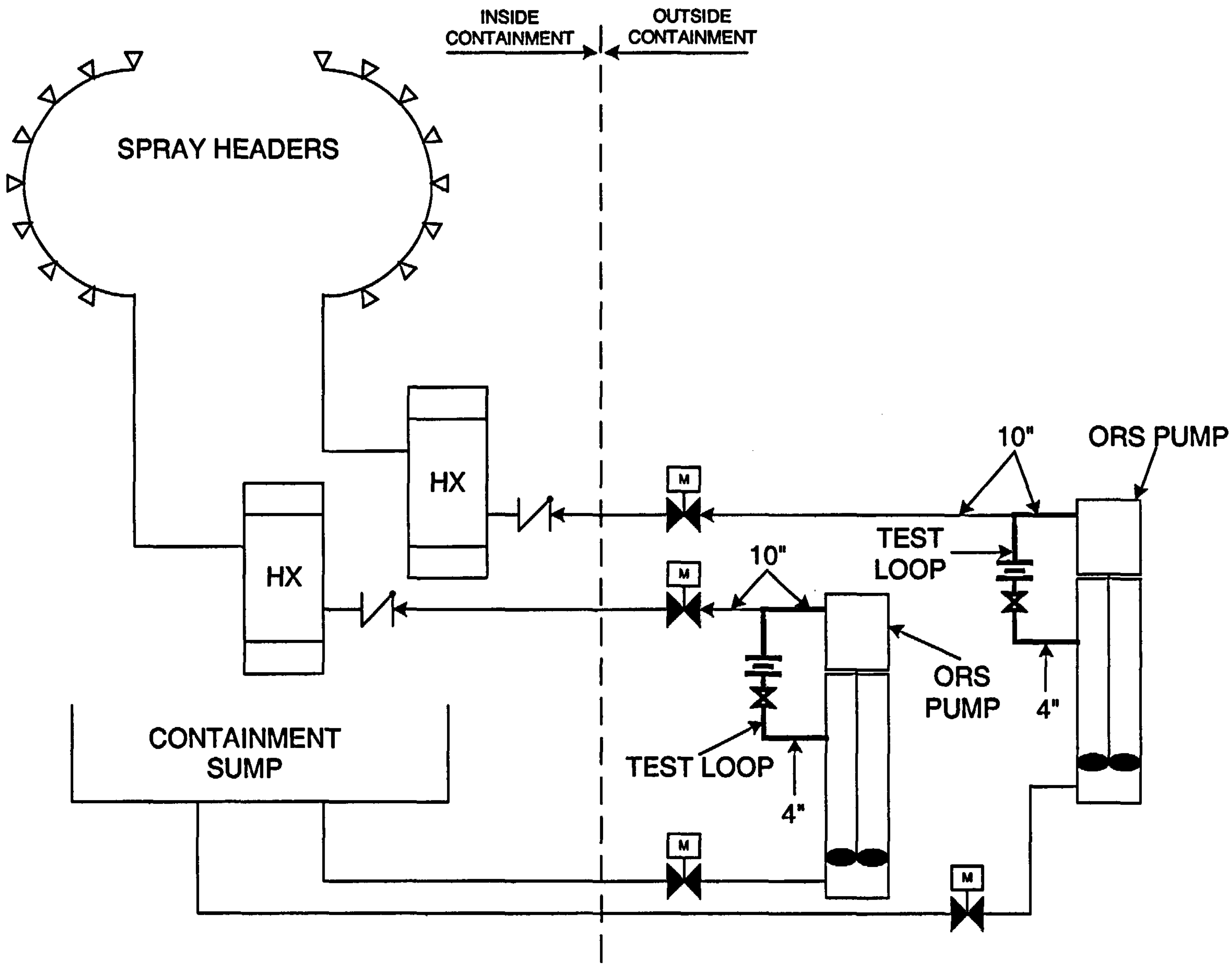

INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
SPRAY HEADERS
HX
HX
M
M
M
M
10"
ORS PUMP
TEST LOOP
10"
ORS PUMP
4"
TEST LOOP
4"
CONTAINMENT SUMP

Figure P-7.4

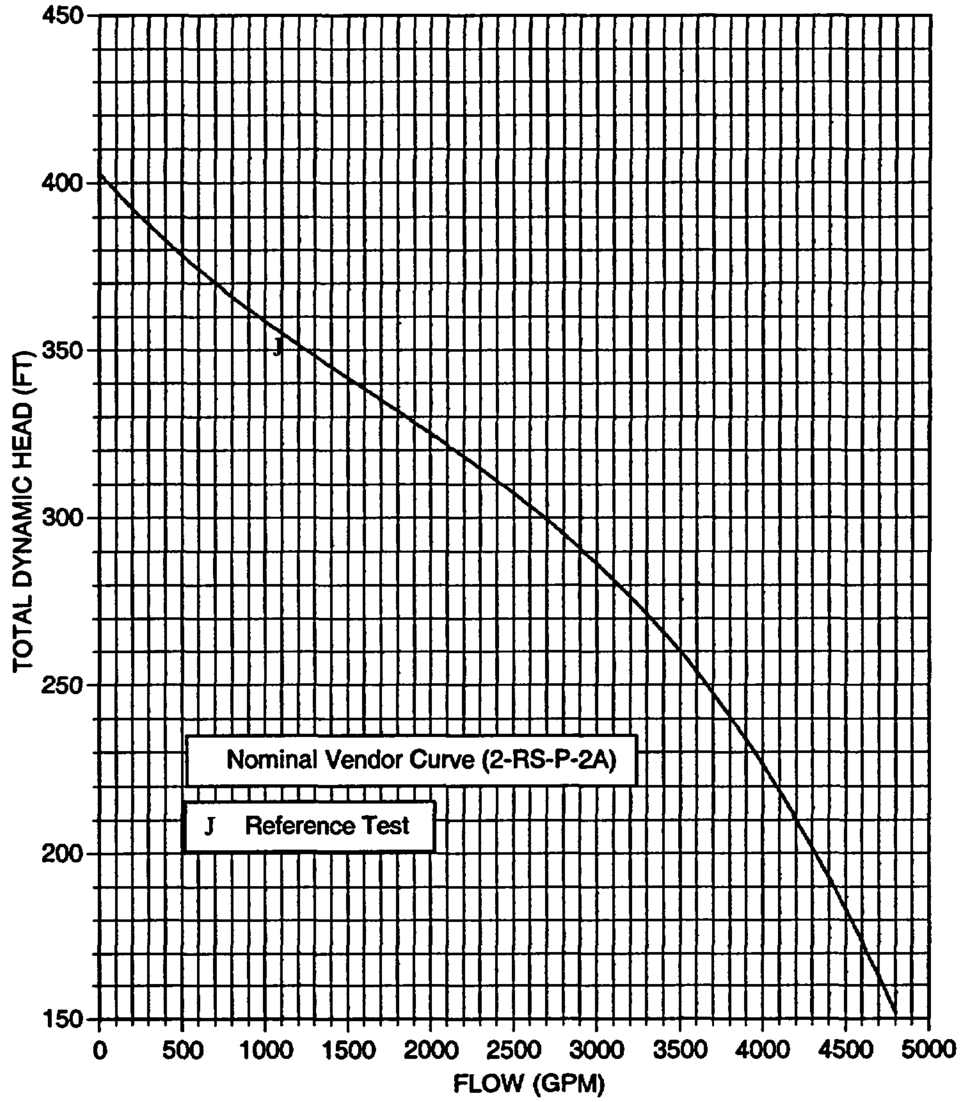

450
400
350
300
250
200
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
FLOW (GPM)
Nominal Vendor Curve (2-RS-P-2A)
J Reference Test
J

Figure P-7.5

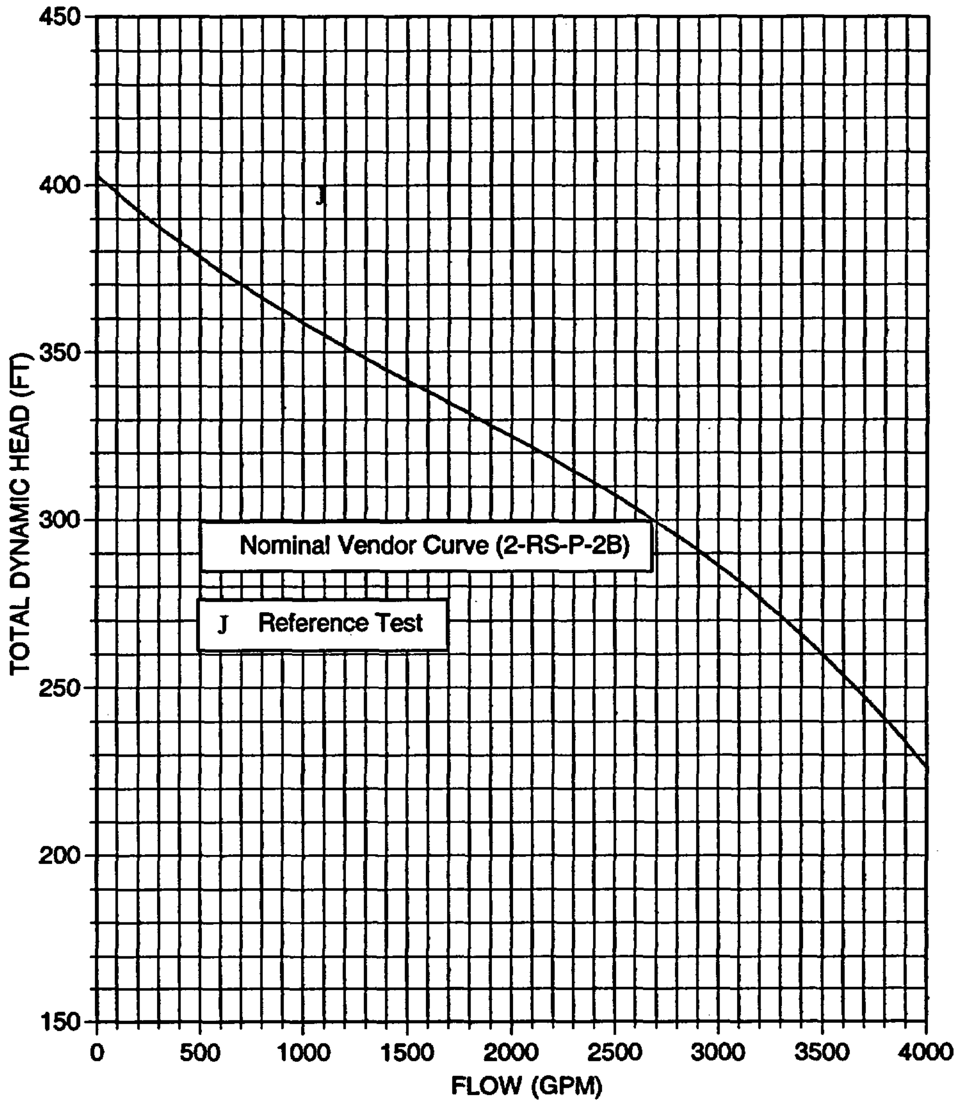

450
400
350
300
250
200
150
TOTAL DYNAMIC HEAD (FT)
0
500
1000
1500
2000
2500
3000
3500
4000
FLOW (GPM)
J
Nominal Vendor Curve (2-RS-P-2B)
J Reference Test

Figure P-7.6

3.7 ALTERNATIVE TESTING FOR NON-CODE PUMPS

According to the minutes of public meeting on Generic Letter 89-04, "Paragraph (g) of 10 CFR 50.55a requires the use of Section XI of the ASME Code for inservice testing of components covered by the Code. Paragraph (g) has been replaced by Paragraph (f) in the currently approved 10 CFR 50.55a. For other components important to safety, the licensee also has the burden of demonstrating their continued operability." The minutes go on to state that, "The Code-required IST program is a reasonable vehicle to provide a periodic demonstration of the operability of pumps and valves not covered by the Code. If non-Code components are included in the ASME Code IST program (or some other licensee-developed inservice testing program) and certain Code provisions cannot be met, the Commission regulations (10 CFR 50.55a) do not require a 'request for relief' to be submitted to the staff. Nevertheless, documentation that provides assurance of the continued operability of the non-Code components through the performed tests should be available at the plant site." Non-Code components are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

Surry Power Station has elected to include certain non-Code components in the ASME IST program. Where the Code provisions cannot be met for non-Code components, alternative testing is performed that is adequate to ensure continued operability. The alternate testing is described in this section. There may be other deviations from Code provisions that are not described in this section. For these cases, documentation is available at the plant site.

As indicated in the minutes of public meeting on Generic Letter 89-04, a 'request for relief' need not be submitted for non-Code components. Therefore, the alternative tests described in this section are not 'requests for relief' but are provided for information.

System : Fuel Oil

Pump(s): 1-EE-P-1B
1-EE-P-1E

Group: B

Class: NC

Function: Emergency diesel generator fuel oil transfer pumps supply fuel oil to the emergency diesel generator fuel oil day tank which directly supplies the emergency diesel generator.

ISTB Code Requirements Which Will Not Be Met

ISTB-3300 requires that reference values be determined from the results of preservice testing or from the results of the first inservice test.

ISTB-3510(f) requires that the frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 HZ.

ISTB-5300(a)(1) requires that for comprehensive pump tests each pump shall be run at least 2 minutes before the test quantities are measured. This requirement does not apply to the quarterly Group B tests.

Basis For Alternate Testing For ISTB-3300

The pumps listed above have at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips). Small values for V_r produce small acceptable ranges for pump operation. The acceptable ranges are defined in Table ISTB-5300-1 as less than or equal to $2.5V_r$. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action.

For very small reference values, hydraulic noise and instrument error can be a significant portion of the reading and affect the repeatability of subsequent measurements. Also, experience gathered from the Surry preventive maintenance program has shown that changes in vibration levels in the range of 0.05 ips do not normally indicate significant degradation in pump performance.

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1 where the measured reference value is less than 0.05 ips.

When new reference values are established per ISTB-3310, ISTB-3320 or ISTB-6200(c), the measured parameters will be evaluated for each location to determine if the provisions of this non-Code alternative test description still apply. If the measured V_r is greater than 0.05 ips, the requirements of ISTB-3300 will be applied. Conversely, if the measured V_r is less than 0.05 ips, a minimum value of 0.05 ips will be used for V_r even if the previous reference value was above 0.05 ips.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Surry Predictive Maintenance Program. The main attributes of the Surry Predictive Maintenance Program are described in Relief Request P-1.

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300 provides an acceptable level of quality and safety.

Basis For Alternate Testing For ISTB-3510(f)

The minimum pump shaft rotational speed for these pumps is 690 rpm. To meet the one-third shaft speed requirement, the low end of the frequency response range would have to be 3.8 Hz. The transducers used for testing the diesel fuel oil transfer pumps have a low end frequency response of 10 Hz. These transducers are capable of detecting vibrations at frequencies of at least one times the rotational speed of the pump, which is adequate for detecting degradation in positive displacement pumps.

Basis For Alternate Testing For ISTB-5300(a)(1)

The pump operating time is limited due to operational restraints. While the diesels are running, these pumps start automatically when the fuel oil level in the day tank reaches the low level switch, and stop when the level reaches the high level switch. The pump run time can vary depending upon the diesel load and the resulting fuel consumption rate. If the pumps are allowed to run for two minutes prior to measuring the test quantities and the fuel consumption rate is low, not enough time is available to gather all of the required ASME OM test data.

Alternate Testing

Pumps with a measured reference value below 0.05 ips for a particular vibration measurement location shall have subsequent test results for that location compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

The transducers used for testing the diesel fuel oil transfer pumps have a low end frequency response of 10 Hz versus the 3.8 Hz required by the Code for a pump running at 690 rpm.

The measurement of ASME OM quantities will begin when the pump automatically starts on a low tank level signal.

Note: The diesel oil transfer pumps are positive displacement pumps. According to Table ISTB-3000-1, discharge pressure, flow and vibration need to be measured for positive displacement pumps. Differential pressure does not have to be measured.

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 2 Technical Specification 4.0.5 describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 valves. The Surry Unit 2 Inservice Testing (IST) Program for Valves has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTC and Technical Specifications.

The scope of the program includes ASME Class 1, 2 and 3, and certain non-Code class valves that are required to perform a specific function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition or mitigating the consequences of an accident.

ISTC defines the rules and requirements of inservice testing of Code Class 1, 2, and 3 valves and states that each valve to be tested by the rules of this subsection shall be identified by the owner and listed in the plant records.

The purpose of the IST Program Plan is to identify the valves that are considered by Virginia Electric and Power (Dominion) Company as having a safety function and are therefore subject to the testing requirements of ISTC. The intent of the Code is to assess operational readiness and detect potentially adverse changes in the mechanical condition of these valves. The relief requests for the IST Program Plan identify Code requirements considered to be impractical, provide technical basis for the request and propose alternate testing when warranted. The relief requests are presented in Section 4.5.

Surry Unit 2 is committed to meeting the leak rate testing requirements of:

1) 10CFR50, Appendix J, Option B for containment isolation valves and

2) ISTC for other valves for which seat leakage is limited to a specific maximum amount (i.e. pressure isolation valves) unless relief is specifically requested from ISTC requirements.

4.2 PROGRAM IMPLEMENTATION

The Valve Inservice Test Program is executed as part of the normal plant surveillance routine. Three types of tests are conducted as part of the Valve Test Program:

1) Valve Exercise Tests,
2) Valve Leakage Tests and

3) Safety Valve Tests

The Exercise Tests verify that:

1) the valve strokes properly,
2) the valve responds to control commands,
3) the valve stroke time is within specific limits and
4) remote position indication accurately reflects the observed valve position. Remote valve position indication will be verified every two years.

Observing the valve operation upon loss of actuating power tests fail safe valves. In most cases, this can be accomplished using normal control circuits.

Those valves that are scheduled to be exercised during cold shutdown are subject to the requirements of ISTC-3521(g) which states that:

> "valve exercising during cold shutdown shall commence within 48 hr of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. For extended outages, testing need not be commenced in 48 hr provided all valves required to be tested during cold shutdown will be tested before or as part of plant startup. However, it is not the intent of this Subsection to keep the plant in cold shutdown to complete cold shutdown testing;"

Check valves which are scheduled to be exercised during cold shutdown are subject to the requirements of ISTC-3522(e)which is similar to ISTC-3521(g). Relief and Safety valves are required to be tested to the requirements of ISTC, Appendix I.

Certain valves cannot be full stroke exercised during normal operation following maintenance. These valves are described in the cold shutdown justifications (refer to Section 4.6) and reactor refueling justifications (refer to Section 4.7). If maintenance cannot be deferred to a shutdown condition, then an engineering evaluation must be performed prior to the maintenance to determine the effect of the maintenance on valve performance. If the evaluation shows that performance will not be affected, then no post maintenance testing is required. A partial stroke test will be performed if possible.

To test check valves to the full open position, the maximum required accident condition flow must be measured through the valve. In certain cases, this flow cannot be practically established or verified. Per ISTC-

5221(c), disassembly and examination of the check valves on a sampling basis is an acceptable alternative testing method.

4.3 PROGRAM ADMINISTRATION

The engineering staff at Surry is responsible for the administration of the IST Program for Valves. The operations staff is responsible for performing the periodic tests as required by this program. The IST Program for Valves is implemented by station periodic test procedures.

4.4 VALVE INSERVICE TEST TABLE

The Valve Inservice Test Table describes how the Valve Program meets ISTC requirements. To aid the reader in the interpretation of the table, brief explanations of the table headings and abbreviations are provided.

For non-Code valves, a request for relief is not necessary when provisions of the Code will not be met. Section 4.8 contains a discussion of the testing requirements for non-Code valves and descriptions of alternative testing in cases where the provisions of the Code will not be met.

1) Valve Number - Each valve in the plant has a unique "mark" number that identifies the system to which the equipment belongs and type of equipment.

2) Drawing and Sheet Number, Coordinate - The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.

3) Valve Type - A brief description of the actuator and valve type.

   The following abbreviations are used to describe actuator types. Valves may be actuated in more than one way.

   MO - Motor Operated
   AO - Pneumatic (Air Operated)
   MAN - Manually Operated
   SO - Electronic solenoid Operated Valves

4) Size - Nominal pipe diameter to which valve connects is given in inches.

5) Code Class - ASME Code Class of each valve as per 10 CFR 50.55a and Regulatory Guide 1.26.

NOTE: NC is for non-Code valves. These valves are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

6) Category - Categories are defined by ISTC-1300. Each valve has specific testing requirements that are determined by the category to which it belongs. Valves marked with an "E" are passive valves.

7) Isolation Valve Type - Valves that are assigned a maximum leakage. The following abbreviations are used to describe the main isolation valve types:

   CIV - Containment Isolation Valve subject to Appendix J, Option B leakage testing as described in Technical Specification Section 4.4.B.

   PIV - Pressure Isolation Valve that protects low pressure safety related piping from RCS pressure. Technical Specification Section 3.1.C specifies the pressure isolation valves that are tested in accordance with this program.

8) Test Required - Testing requirements identified for the valves are identified here.

   ST - Stroke times shall be measured per ISTC-5100 or as modified by a specific relief request.

   EV - Exercise valve for operability at least once every 3 months per ISTC-5100 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by ISTC-3521.

   LT - Leak test shall be performed per ISTC-3600 or as modified by specific relief request.

   CV - Check valves shall be exercised at least once every 3 months per ISTC-3510 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by ISTC-3522.

   VP - Valve position indication shall be verified per ISTC-3700 or as modified by a specific relief request.

   SP - Set points of safety and relief valves shall be tested per ISTC, Appendix I or as modified by a specific relief request. Class 1 power actuated relief valves are tested to the requirements of ISTC, Appendix I, I-7320.

FS - Valves with fail-safe actuators shall be tested by observing the operation of the valves upon loss of the actuator power at least once every 3 months per ISTC-3560 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by ISTC-3521.

9) Test Position - The following abbreviations are used to describe normal valve positions to which the valves are tested (including the valve safety position):

   O - Open
   C - Close
   OC - Open and Close
   P - Partially Open

10) Test Frequency - The following abbreviations are used to describe the test frequency:

   03 - Nominally every three months

   24 - Every 24 months

   60 - Every 60 months

   120 - Every 120 months

   CS - Every cold shutdown but not more often then every three months

   RR - Every reactor refueling outage

   OPB - Per the test frequency determined by the Appendix J, Option B program for leak testing containment isolation valves

11) Relief Request Reference

12) Cold Shutdown Justification Reference

13) Reactor Refueling Justification Reference

14) Non-Code Alternative Test Reference

15) Function - A brief description of the function of the valve.

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-BD-TV-200A	11548-CBM-124A	1 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"A" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
2-BD-TV-200B	11548-CBM-124A	1 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"A" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-BD-TV-200C	11548-CBM-124A	2 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"B" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
2-BD-TV-200D	11548-CBM-124A	2 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"B" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-BD-TV-200E	11548-CBM-124A	3 OF 4	C-7	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		
									VP	OC	24				
	"C" STEAM GENERATOR BLOWDOWN, INSIDE CONTAINMENT ISOLATION VALVE														
2-BD-TV-200F	11548-CBM-124A	3 OF 4	C-6	AO GATE	3	2	B		EV	C	CS		12		
									FS	C	CS		12		
									ST	C	CS		12		

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-BD-TV-200F	11548-CBM-124A	3 OF 4	C-6	AO GATE	3	2	B		VP	OC	24				
	"C" STEAM GENERATOR BLOWDOWN, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-569	11448-CBM-072D	1 OF 5	B-5	CHECK VALVE	18	3	C		CV	C	03				
										O	03				
	"D" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE														
1-CC-578	11448-CBM-072D	1 OF 5	B-5	CHECK VALVE	18	3	C		CV	C	03				
										O	03				
	"C" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE														
2-CC-001	11548-CBM-072A	2 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "A" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
2-CC-058	11548-CBM-072A	3 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "B" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
2-CC-059	11548-CBM-072A	4 OF 7	F-7	CHECK VALVE	6	3	C		CV	C	RR			10	
										O	RR			10	
	CC SUPPLY TO "C" RC PUMP LO, STATOR SHROUD & THERM BARRIER COOLERS, ISOL CHECK VLV														
2-CC-094	11548-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-095	11548-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-176	11548-CBM-072A	1 OF 7	F-7	CHECK VALVE	18	3	C		CV	C	RR			9	
										O	RR			9	
	CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
2-CC-177	11548-CBM-072A	1 OF 7	F-7	CHECK VALVE	18	3	C		CV	C	RR			9	

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-177	11548-CBM-072A	1 OF 7	F-7	CHECK VALVE	18	3	C		CV	O	RR			9	
	CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
2-CC-181	11548-CBM-072A	1 OF 7	E-2	MANUAL BFLY	18	3	B		EV	C	24				
										O	24				
	CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
2-CC-185	11548-CBM-072A	1 OF 7	C-2	MANUAL BFLY	18	3	B		EV	C	24				
										O	24				
	CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
2-CC-224	11548-CBM-072B	1 OF 3	D-2	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	
	CC SUPPLY TO "C" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-CC-233	11548-CBM-072B	1 OF 3	D-6	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	
	CC SUPPLY TO "B" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-CC-242	11548-CBM-072B	1 OF 3	D-8	CHECK VALVE	6	3	C		CV	C	RR			11	
										O	RR			11	
	CC SUPPLY TO "A" RECIRC AIR COOLING COILS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-CC-329	11548-CBM-071B	2 OF 2	D-3	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE														
2-CC-555	11548-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-556	11548-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-557	11548-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-592	11548-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	C		CV	C	RR			7	
										O	RR			7	
	COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE														
2-CC-764	11548-CBM-071B	2 OF 2	C-7	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE														
2-CC-806	11448-CBM-072E	1 OF 2	C-5	CHECK VALVE	1	3	C		CV	C	18	5			
										O	RR			21	
	CHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE														
2-CC-LCV-201	11548-CBM-071B	2 OF 2	D-5	AO GATE	1	3	B		EV	C	CS		16		
										O	CS		16		
									FS	C	CS		16		
									ST	C	NA	1			
										O	NA	1			
	CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE														
2-CC-RV-212A	11548-CBM-072B	1 OF 3	C-7	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
2-CC-RV-212B	11548-CBM-072B	1 OF 3	C-5	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
2-CC-RV-212C	11548-CBM-072B	1 OF 3	C-3	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-RV-216A	11548-CBM-072A	2 OF 7	C-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
2-CC-RV-216B	11548-CBM-072A	3 OF 7	C-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
2-CC-RV-216C	11548-CBM-072A	4 OF 7	C-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	RCP THERMAL BARRIER COOLING WATER THERMAL RELIEF VALVE														
2-CC-RV-219A	11548-CBM-072A	1 OF 7	E-3	RELIEF VALVE	1.5	3	C		SP	O	120				
	"A" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
2-CC-RV-219B	11548-CBM-072A	1 OF 7	D-3	RELIEF VALVE	1.5	3	C		SP	O	120				
	"B" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
2-CC-RV-224	11548-CBM-072A	5 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	COMPONENT COOLING PIPING RELIEF														
2-CC-RV-238A	11548-CBM-072A	2 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
2-CC-RV-238B	11548-CBM-072A	3 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
2-CC-RV-238C	11548-CBM-072A	4 OF 7	F-6	RELIEF VALVE	0.75	3	C		SP	O	120				
	REACTOR SHROULD COOLING COIL RELIEF VALVE														
2-CC-TV-205A	11548-CBM-072A	2 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		
									ST	C	CS		2		
									VP	OC	24				
	CC RETURN FROM "A" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-205B	11548-CBM-072A	3 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		
									ST	C	CS		2		

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-TV-205B	11548-CBM-072A	3 OF 7	B-4	AO BALL	6	3	B		VP	OC	24				
	CC RETURN FROM "B" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-205C	11548-CBM-072A	4 OF 7	B-4	AO BALL	6	3	B		EV	C	CS		2		
									FS	C	CS		2		
									ST	C	CS		2		
									VP	OC	24				
	CC RETURN FROM "C" RC PUMP LO,STATOR & SHROUD COOLERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-209A	11548-CBM-072A	1 OF 7	B-7	AO BFLY	18	3	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CC RETURN FROM "A" RHR HEAT EXCHANGER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-209B	11548-CBM-072A	1 OF 7	C-7	AO BFLY	18	3	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CC RETURN FROM "B" RHR HEAT EXCHANGER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-210A	11548-CBM-072B	1 OF 3	E-7	AO BFLY	6	3	B		EV	C	03				
									FS	C	03				
									ST	C	03				
									VP	OC	24				
	CC RETURN FROM "A" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-210B	11548-CBM-072B	1 OF 3	E-5	AO BFLY	6	3	B		EV	C	03				
									FS	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-TV-210B	11548-CBM-072B	1 OF 3	E-5	AO BFLY	6	3	B		ST	C	03				
									VP	OC	24				
	CC RETURN FROM "B" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-210C	11548-CBM-072B	1 OF 3	E-4	AO BFLY	6	3	B		EV	C	03				
									FS	C	03				
									ST	C	03				
									VP	OC	24				
	CC RETURN FROM "C" RECIRC AIR COOLING COILS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-220A	11548-CBM-072A	2 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														
2-CC-TV-220B	11548-CBM-072A	3 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														
2-CC-TV-220C	11548-CBM-072A	4 OF 7	C-5	AO GATE	1.5	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE														
2-CC-TV-240A	11548-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CC RETURN FROM COOLANT PUMP THERMAL BARRIERS, INSIDE CONTAINMENT ISOLATION VALVE														
2-CC-TV-240B	11548-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	B		EV	C	CS		14		
									FS	C	CS		14		
									ST	C	CS		14		
									VP	OC	24				
	CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIERS, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CH-109	11448-CBM-088A	1 OF 2	C-5	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"C" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
1-CH-116	11448-CBM-088A	1 OF 2	C-4	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"D" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
2-CH-225	11548-CBM-088B	1 OF 3	D-3	CHECK VALVE	1	2	C		CV	C	18	4			
										O	RR			20	
	MANUAL EMERGENCY BORATION PATH CHECK VALVE														
2-CH-227	11548-CBM-088B	1 OF 3	B-5	CHECK VALVE	2	2	C		CV	C	18	4			
										O	RR			20	
	MAIN EMERGENCY BORATION LINE TO CHARGING PUMP SUCTION CHECK VALVE														
2-CH-228	11548-CBM-088B	1 OF 3	B-4	MANUAL GATE	1	2	B		EV	O	24				
	MANUAL EMERGENCY BORATION PATH MANUAL VALVE														
2-CH-229	11548-CBM-088B	1 OF 3	B-4	CHECK VALVE	1	2	C		CV	C	18	4			
										O	RR			20	
	MANUAL EMERGENCY BORATION PATH CHECK VALVE														
2-CH-230	11548-CBM-088B	1 OF 3	C-6	CHECK VALVE	4	2	C		CV	C	RR			8	
										O	03				
	CHARGING PUMP SUPPLY FROM VOLUME CONTROL TANK DISCHARGE CHECK VALVE														
2-CH-256	11548-CBM-088B	2 OF 3	D-7	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"A" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
2-CH-258	11548-CBM-088B	2 OF 3	D-7	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	
	"A" CHARGING PUMP DISCHARGE CHECK VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-265	11548-CBM-088B	2 OF 3	D-6	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"B" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
2-CH-267	11548-CBM-088B	2 OF 3	D-6	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	
	"B" CHARGING PUMP DISCHARGE CHECK VALVE														
2-CH-274	11548-CBM-088B	2 OF 3	D-4	CHECK VALVE	2	2	C		CV	C	03				
										O	03				
	"C" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
2-CH-276	11548-CBM-088B	2 OF 3	D-4	CHECK VALVE	3	2	C		CV	C	03				
										O	RR			1	
	"C" CHARGING PUMP DISCHARGE CHECK VALVE														
2-CH-309	11548-CBM-088C	1 OF 2	D-4	CHECK VALVE	3	2	C		CV	C	CS		20		
										O	CS		20		
	MAIN CHARGING SUPPLY HEADER CHECK VALVE														
2-CH-FCV-2113A	11548-CBM-088B	1 OF 3	C-3	AO GLOBE	1	2	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
									VP	OC	24				
	MANUAL EMERGENCY BORATION PATH FLOW CONTROL VALVE														
2-CH-FCV-2114A	11548-CBM-088B	1 OF 3	D-4	AO GLOBE	2	2	B		EV	C	03				
									FS	C	03				
									ST	C	NA	1			
									VP	OC	24				
	PRIMARY GRADE WATER SUPPLY TO BORIC ACID BLENDER ISOLATION VALVE														
2-CH-FCV-2160	11548-CBM-088C	1 OF 2	B-4	AO GLOBE	2	1	E		VP	OC	24				
	CHARGING FLOW CONTROL TO LOOP FILL HEADER ISOLATION VALVE														
2-CH-LCV-2460A	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	B		EV	C	CS		7		

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-LCV-2460A	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	B		FS	C	CS		7		
									ST	C	CS		7		
									VP	OC	24				
	NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION														
2-CH-LCV-2460B	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	B		EV	C	CS		7		
									FS	C	CS		7		
									ST	C	CS		7		
									VP	OC	24				
	NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION														
2-CH-MOV-2115B	11548-CBM-088B	2 OF 3	B-8	MO GATE	8	2	A		EV	C	03				
										O	03				
									LT	C	24	2			
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK														
2-CH-MOV-2115C	11548-CBM-088B	1 OF 3	C-6	MO GATE	4	2	B		EV	C	CS		5		
									ST	C	CS		5		
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION FROM VOLUME CONTROL TANK														
2-CH-MOV-2115D	11548-CBM-088B	2 OF 3	C-8	MO GATE	8	2	A		EV	C	03				
										O	03				
									LT	C	24	2			
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK														
2-CH-MOV-2115E	11548-CBM-088B	1 OF 3	C-6	MO GATE	4	2	B		EV	C	CS		5		
									ST	C	CS		5		
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CHARGING PUMP SUPPLY ISOLATION VALVE FROM VOLUME CONTROL														
2-CH-MOV-2267A	11548-CBM-088B	2 OF 3	C-7	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
2-CH-MOV-2267B	11548-CBM-088B	2 OF 3	B-7	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
2-CH-MOV-2269A	11548-CBM-088B	2 OF 3	C-5	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
2-CH-MOV-2269B	11548-CBM-088B	2 OF 3	B-5	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
2-CH-MOV-2270A	11548-CBM-088B	2 OF 3	C-3	MO GATE	6	2	E		VP	OC	24				
	CHARGING PUMP SUCTION ISOLATION VALVE FROM RWST, VCT AND LHSI PUMP														
2-CH-MOV-2270B	11548-CBM-088B	2 OF 3	B-3	MO GATE	6	2	E		VP	OC	24				
	LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE														
2-CH-MOV-2275A	11548-CBM-088B	2 OF 3	D-7	MO GATE	2	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														
2-CH-MOV-2275B	11548-CBM-088B	2 OF 3	D-5	MO GATE	2	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-MOV-2275C	11548-CBM-088B	2 OF 3	D-3	MO GATE	2	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"C" CHARGING PUMP MINIMUM RECIRCULATION ISOLATION VALVE														
2-CH-MOV-2286A	11548-CBM-088B	2 OF 3	E-7	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2286B	11548-CBM-088B	2 OF 3	E-6	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2286C	11548-CBM-088B	2 OF 3	E-4	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2287A	11548-CBM-088B	2 OF 3	D-7	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2287B	11548-CBM-088B	2 OF 3	D-6	MO GATE	3	2	B		EV	C	03				
										O	03				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-MOV-2287B	11548-CBM-088B	2 OF 3	D-6	MO GATE	3	2	B		ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2287C	11548-CBM-088B	2 OF 3	D-4	MO GATE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE														
2-CH-MOV-2289A	11548-CBM-088C	1 OF 2	B-4	MO GATE	3	2	B		EV	C	CS		8		
									ST	C	CS		8		
									VP	OC	24				
	MAIN CHARGING HEADER ISOLATION VALVE														
2-CH-MOV-2289B	11548-CBM-088C	1 OF 2	B-3	MO GATE	3	2	B		EV	C	CS		8		
									ST	C	CS		8		
									VP	OC	24				
	MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT														
2-CH-MOV-2350	11548-CBM-088B	1 OF 3	B-5	MO GATE	2	2	B		EV	O	03		11		
									ST	O	03		11		
									VP	OC	24				
	EMERGENCY BORATION TO CHARGING PUMP SUCTION														
2-CH-MOV-2373	11548-CBM-088B	2 OF 3	E-7	MO GATE	3	2	B		VP	OC	24				
	CHARGING PUMP RECIRCULATION HEADER ISOLATION VALVE														
2-CH-MOV-2381	11548-CBM-088B	1 OF 3	C-8	MO GATE	3	2	A	CIV	EV	C	CS		6		
									LT	C	OPB				
									ST	C	CS		6		
									VP	OC	24				
	REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-RV-2203	11548-CBM-088C	1 OF 2	F-4	RELIEF VALVE	2	2	C		SP	O	120				
	LETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANK														
2-CH-RV-2382A	11548-CBM-088C	2 OF 2	F-5	RELIEF VALVE	2	2	C		SP	O	120				
	REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARGE TO PRESSURIZER RELIEF TANK														
2-CH-RV-2382B	11548-CBM-088B	1 OF 3	C-7	RELIEF VALVE	2	2	C		SP	O	120				
	SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK														
2-CH-TV-2204A	11548-CBM-088C	1 OF 2	D-3	AO GATE	2	2	A	CIV	EV	C	CS		7		
									FS	C	CS		7		
									LT	C	OPB				
									ST	C	CS		7		
									VP	OC	24				
	LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE														
2-CH-TV-2204B	11548-CBM-088A	2 OF 2	D-3	AO GATE	2	2	A	CIV	EV	C	CS		7		
									FS	C	CS		7		
									LT	C	OPB				
									ST	C	CS		7		
									VP	OC	24				
	LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CS-013	11548-CBM-084A	2 OF 3	F-4	CHECK VALVE	8	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"A" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE														
2-CS-024	11548-CBM-084A	2 OF 3	E-4	CHECK VALVE	8	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"B" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE														
2-CS-045	11548-CBM-084A	1 OF 3	F-8	CHECK VALVE	2	2	C		CV	C	18	3			
										O	18	3			
	RWST COOLING SYSTEM RETURN ISOLATION CHECK VALVE														
2-CS-104	11548-CBM-084A	2 OF 3	F-3	CHECK VALVE	8	2	C		CV	C	RR			17	
										O	RR			17	
	CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE														
2-CS-105	11548-CBM-084A	2 OF 3	E-3	CHECK VALVE	8	2	C		CV	C	RR			17	
										O	RR			17	
	CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE														
2-CS-MOV-200A	11548-CBM-084A	2 OF 3	B-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE														
2-CS-MOV-200B	11548-CBM-084A	2 OF 3	A-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE														
2-CS-MOV-201A	11548-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CS-MOV-201A	11548-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	ST	C	03				
										O	03				
									VP	OC	24				
	"A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CS-MOV-201B	11548-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CS-MOV-201C	11548-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CS-MOV-201D	11548-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CS-MOV-202A	11548-CBM-084A	3 OF 3	C-6	MO GATE	6	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CS-MOV-202B	11548-CBM-084A	3 OF 3	B-6	MO GATE	6	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CV-002	11548-CBM-085A	1 OF 2	D-4	MAN GATE	8	2	AE	CIV	LT	C	OPB				
	CONTAINMENT VACUUM EJECTOR SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CV-HCV-200	11548-CBM-085A	1 OF 2	D-3	AO GATE	8	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	CONTAINMENT VACUUM EJECTOR, INSIDE CONTAINMENT ISOLATION														
2-CV-TV-250A	11548-CBM-085A	2 OF 2	E-4	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"A" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CV-TV-250B	11548-CBM-085A	2 OF 2	E-5	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"A" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CV-TV-250C	11548-CBM-085A	2 OF 2	D-4	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	"B" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-CV-TV-250D	11548-CBM-085A	2 OF 2	D-5	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CW-MOV-200A	11548-CBM-071A	2 OF 3	F-7	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
2-CW-MOV-200B	11548-CBM-071A	2 OF 3	F-7	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
2-CW-MOV-200C	11548-CBM-071A	2 OF 3	F-6	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
2-CW-MOV-200D	11548-CBM-071A	2 OF 3	F-5	MO BFLY	96	NC	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER DISCHARGE ISOLATION VALVE														
2-CW-MOV-206A	11548-CBM-071A	2 OF 3	D-7	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
2-CW-MOV-206B	11548-CBM-071A	2 OF 3	D-7	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
2-CW-MOV-206C	11548-CBM-071A	2 OF 3	D-5	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	CONDENSER INLET ISOLATION VALVE														
2-CW-MOV-206D	11548-CBM-071A	2 OF 3	D-5	MO BFLY	96	3	B		EV	C	03				
									ST	C	03				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CW-MOV-206D	11548-CBM-071A CONDENSER INLET ISOLATION VALVE	2 OF 3	D-5	MO BFLY	96	3	B		VP	OC	24				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-DA-TV-200A	11548-CBM-083B	3 OF 3	B-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE														
2-DA-TV-200B	11548-CBM-083A	1 OF 2	E-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-DA-TV-203A	11548-CBM-083B	3 OF 3	E-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-DA-TV-203B	11548-CBM-083B	3 OF 3	E-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT TRIP VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-DG-TV-208A	11548-CBM-083B	1 OF 3	B-2	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE														
2-DG-TV-208B	11548-CBM-083A	2 OF 2	C-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-EE-013	11448-FB -038A	2 OF 3	D-7	CHECK VALVE	1.5	NC	C		CV	C O	18 03				6
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-031	11448-FB -038A	2 OF 3	D-6	CHECK VALVE	1.5	NC	C		CV	C O	18 03				6
	DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK														
1-EE-RV-104	11448-FB -038A	2 OF 3	D-7	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-107	11448-FB -038A	2 OF 3	D-6	RELIEF VALVE	0.5	NC	C		SP	O	120				
	DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE RV DISCHARGE TO PUMP SUCTION														
1-EE-SOV-102	11448-FB -038A	2 OF 3	D-4	SO GATE	1	NC	B		EV	O	03				3
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-103	11448-FB -038A	2 OF 3	D-4	SO GATE	1	NC	B		EV	O	03				3
	DIESEL FUEL OIL PUMP DISCHARGE VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-EG-040	11448-FB -046B	1 OF 3	B-8	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
2-EG-042	11448-FB -046B	1 OF 3	B-4	CHECK VALVE	0.75	NC	AC		CV	C	03				
										O	03				
									LT	C	24				
	DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE														
2-EG-043	11448-FB -046B	1 OF 3	E-7	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
2-EG-044	11448-FB -046B	1 OF 3	E-3	AIR PILOT	0	NC	B		EV	O	03				
									ST	O	03				2
	EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE														
2-EG-045	11448-FB -046B	1 OF 3	E-7	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
2-EG-046	11448-FB -046B	1 OF 3	E-4	CHECK VALVE	0	NC	C		CV	C	03				2
										O	03				2
	EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE														
2-EG-SOV-200A	11448-FB -046B	1 OF 3	D-7	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				2
	DIESEL AIR START SYSTEM SOLENOID VALVE														
2-EG-SOV-200B	11448-FB -046B	1 OF 3	D-4	SO GATE	1	NC	B		EV	O	03				
									ST	O	03				2
	DIESEL AIR START SYSTEM SOLENOID VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FP-151	11548-CBB-047B	1 OF 1	D-6	MAN BALL	4	2	AE	CIV	LT	C	OPB				
	FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-FP-152	11548-CBB-047B	1 OF 1	D-7	MAN BALL	4	2	AE	CIV	LT	C	OPB				
	FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-010	11548-CBM-068A	1 OF 4	E-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"A" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
2-FW-027	11548-CBM-068A	1 OF 4	E-6	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"A" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
2-FW-041	11548-CBM-068A	1 OF 4	D-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"B" MAIN FEEDWATER HEADER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
2-FW-058	11548-CBM-068A	1 OF 4	C-6	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"B" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
2-FW-072	11548-CBM-068A	1 OF 4	C-6	CHECK VALVE	14	2	C		CV	C	RR			13	
										O	RR			13	
	"C" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
2-FW-089	11548-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	C		CV	C	CS		21		
										O	CS		21		
	"C" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
2-FW-131	11548-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
2-FW-133	11548-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
2-FW-136	11548-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
2-FW-138	11548-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	C		CV	C	RR			19	
										O	RR			19	
	AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
2-FW-142	11548-CBM-068A	3 OF 4	D-8	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
2-FW-144	11548-CBM-068A	3 OF 4	D-7	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK														
2-FW-148	11548-CBM-068A	3 OF 4	E-7	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
2-FW-157	11548-CBM-068A	3 OF 4	D-6	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
2-FW-159	11548-CBM-068A	3 OF 4	D-6	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
2-FW-163	11548-CBM-068A	3 OF 4	E-6	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-172	11548-CBM-068A	3 OF 4	D-5	CHECK VALVE	6	3	C		CV	C	RR			12	
										O	03				
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK														
2-FW-174	11548-CBM-068A	3 OF 4	D-5	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
2-FW-178	11548-CBM-068A	3 OF 4	E-4	CHECK VALVE	1	3	C		CV	C	RR			15	
										O	RR			15	
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
2-FW-272	11548-CBM-068A	1 OF 4	A-8	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
2-FW-273	11548-CBM-068A	1 OF 4	A-7	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
2-FW-305	11548-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
2-FW-306	11548-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	C		CV	C	RR			12	
										O	RR			12	
	CHECK VALVE AT CONT PENE (CROSS-CONNECT FOR UNIT 1 AUX FEED FROM UNIT 2)														
2-FW-FCV-2478	11548-CBM-068A	1 OF 4	E-4	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	MAIN FEEDWATER REGULATING VALVE														
2-FW-FCV-2488	11548-CBM-068A	1 OF 4	D-4	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE														
2-FW-FCV-2498	11548-CBM-068A	1 OF 4	B-4	AO GATE	14	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE														
2-FW-HCV-255A	11548-CBM-068A	1 OF 4	F-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
2-FW-HCV-255B	11548-CBM-068A	1 OF 4	D-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
2-FW-HCV-255C	11548-CBM-068A	1 OF 4	C-3	AO GATE	4	NC	B		EV	C	CS		15		
									FS	C	CS		15		
									ST	C	NA				5
									VP	OC	24				
	MAIN FEEDWATER REGULATING VALVE BYPASS VALVE														
2-FW-MOV-251A	11548-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	NORMAL AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR														
2-FW-MOV-251B	11548-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR														
2-FW-MOV-251C	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR														
2-FW-MOV-251D	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	NORMAL AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR														
2-FW-MOV-251E	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR														
2-FW-MOV-251F	11548-CBM-068A	1 OF 4	B-5	MO GLOBE	3	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-MOV-260A	11448-CBM-068A	3 OF 4	F-7	MO GLOBE	6	3	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2														
2-FW-MOV-260B	11448-CBM-068A	3 OF 4	F-7	MO GLOBE	6	3	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-GW-TV-200	11448-CBM-090C	1 OF 1	C-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1														
2-GW-TV-201	11448-CBM-090C	1 OF 1	C-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1														
2-GW-TV-202	11448-CBM-090C	1 OF 1	B-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1														
2-GW-TV-203	11448-CBM-090C	1 OF 1	B-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1														
2-GW-TV-204	11448-CBM-090C	1 OF 1	E-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-GW-TV-205	11448-CBM-090C	1 OF 1	E-4	SO GATE	0.375	2	A	CIV	EV	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-GW-TV-205	11448-CBM-090C	1 OF 1	E-4	SO GATE	0.375	2	A	CIV	FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-GW-TV-206	11448-CBM-090C	1 OF 1	D-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-GW-TV-207	11448-CBM-090C	1 OF 1	D-4	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-GW-TV-211A	11448-CBM-090C	1 OF 1	F-3	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, INSIDE CONTAINMENT ISOLATION VALVE														
2-GW-TV-211B	11448-CBM-090C	1 OF 1	F-3	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-IA-381	11548-FM -075C	2 OF 2	B-6	CHECK VALVE	0.75	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 2-RC-PCV-2456 SUPPLY CHECK VALVE														
2-IA-384	11548-FM -075C	2 OF 2	B-5	CHECK VALVE	0.75	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 2-RC-PCV-2455C SUPPLY CHECK VALVE														
2-IA-395	11548-FM -075C	2 OF 2	B-6	CHECK VALVE	0.75	NC	AC		CV	C	RR				1
										O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 2-RC-PCV-2456 ISOLATION CHECK VALVE														
2-IA-396	11548-FM -075C	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		CV	C	RR				1
										O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 2-RC-PCV-2455C ISOLATION CHECK VALVE														
2-IA-446	11448-CBM-075C	1 OF 5	D-7	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	BACKUP INSTRUMENT AIR TO CONTAINMENT FROM UNIT 2														
2-IA-704	11548-CBM-075B	2 OF 2	C-3	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	BACKUP INSTRUMENT AIR TO CONTAINMENT FROM UNIT 2														
2-IA-864	11548-CBM-075C	1 OF 2	E-3	CHECK VALVE	2	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-IA-868	11548-CBM-075C	1 OF 2	E-3	CHECK VALVE	2	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-IA-947	11548-FM -075D	1 OF 1	B-7	CHECK VALVE	0.5	NC	AC		CV	C	RR				1

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-IA-947	11548-FM -075D	1 OF 1	B-7	CHECK VALVE	0.5	NC	AC		CV	O	RR				1
									LT	C	24				
	BOTTLED AIR SUPPLY TO 2-MS-SOV-202A,B ISOLATION CHECK VALVE														
2-IA-948	11548-FM -075D	1 OF 1	B-8	CHECK VALVE	0.5	NC	C		CV	C	RR				1
										O	RR				1
	BOTTLED AIR SUPPLY TO 2-MS-SOV-202A,B SUPPLY CHECK VALVE														
2-IA-RV-210	11548-FM -075C	2 OF 2	B-7	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORVS RELIEF VALVE														
2-IA-RV-211	11548-FM -075C	2 OF 2	A-5	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORVS RELIEF VALVE														
2-IA-RV-223	11548-FM -075C	2 OF 2	B-5	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORVS RELIEF VALVE														
2-IA-RV-224	11548-FM -075C	2 OF 2	B-6	RELIEF VALVE	0	NC	C		SP	O	120				
	BOTTLED AIR SUPPLY TO PORVS RELIEF VALVE														
2-IA-TV-200	11548-CBM-075B	2 OF 2	B-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-IA-TV-201A	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUCTION FROM CONTAINMENT														
2-IA-TV-201B	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-IA-TV-201B	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	INSTRUMENT AIR SUCTION FROM CONTAINMENT														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-LM-TV-200A	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200B	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200C	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200D	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200E	11548-CBM-085A	1 OF 2	B-4	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200F	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200G	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-LM-TV-200H	11548-CBM-085A	1 OF 2	B-7	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-MS-087	11548-CBM-064A	1 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE														
2-MS-120	11548-CBM-064A	2 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE														
2-MS-158	11548-CBM-064A	3 OF 6	C-6	MANUAL GATE	4	2	B		EV	C	24				
	MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE														
2-MS-176	11548-CBM-064A	4 OF 6	C-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"A" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
2-MS-178	11548-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"B" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
2-MS-182	11548-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	C		CV	C	RR			16	
										O	03				
	"C" MAIN STEAM HEADER SUPPLY CHECK VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
2-MS-NRV-201A	11548-CBM-064A	1 OF 6	E-4	MO STOP CHECK	30	NC	C		CV	C	RR				4
										O	RR				4
									VP	OC	24				
	"A" MAIN STEAM HEADER NON-RETURN VALVE														
2-MS-NRV-201B	11548-CBM-064A	2 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	C	RR				4
										O	RR				4
									VP	OC	24				
	"B" MAIN STEAM HEADER NON-RETURN VALVE														
2-MS-NRV-201C	11548-CBM-064A	3 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	C	RR				4

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-MS-NRV-201C	11548-CBM-064A	3 OF 6	D-3	MO STOP CHECK	30	NC	C		CV	O	RR				4
									VP	OC	24				
	"C" MAIN STEAM HEADER NON-RETURN VALVE														
2-MS-PCV-202A	11548-CBM-064A	4 OF 6	C-4	AO GATE	3	2	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
2-MS-PCV-202B	11548-CBM-064A	4 OF 6	D-5	AO GATE	3	2	B		EV	C	03				
										O	03				
									FS	C	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP														
2-MS-RV-201A	11548-CBM-064A	1 OF 6	E-5	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	
									ST	C	NA	1			
									VP	OC	24				
	"A" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
2-MS-RV-201B	11548-CBM-064A	2 OF 6	E-6	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	
									ST	C	NA	1			
									VP	OC	24				
	"B" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
2-MS-RV-201C	11548-CBM-064A	3 OF 6	E-5	AO ANGLE	4	2	B		EV	C	RR			24	
									FS	C	RR			24	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-MS-RV-201C	11548-CBM-064A	3 OF 6	E-5	AO ANGLE	4	2	B		ST VP	C OC	NA 24	1			
	"C" MAIN STEAM HEADER DISCHARGE TO ATMOSPHERE POWER OPERATED RELIEF VALVE														
2-MS-SV-201A	11548-CBM-064A	1 OF 6	E-6	SAFETY VALVE	4	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-201B	11548-CBM-064A	2 OF 6	D-6	SAFETY VALVE	4	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-201C	11548-CBM-064A	3 OF 6	D-6	SAFETY VALVE	4	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-202A	11548-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-202B	11548-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-202C	11548-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-203A	11548-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-203B	11548-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGEE TO ATMOS														
2-MS-SV-203C	11548-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-204A	11548-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-204B	11548-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-204C	11548-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-205A	11548-CBM-064A	1 OF 6	E-5	SAFETY VALVE	6	2	C		SP	O	120				
	"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-205B	11548-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-SV-205C	11548-CBM-064A	3 OF 6	D-5	SAFETY VALVE	6	2	C		SP	O	120				
	"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
2-MS-TV-201A	11548-CBM-064A	1 OF 6	D-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"A" MAIN STEAM HEADER TRIP VALVE														
2-MS-TV-201B	11548-CBM-064A	2 OF 6	C-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"B" MAIN STEAM HEADER TRIP VALVE														
2-MS-TV-201C	11548-CBM-064A	3 OF 6	C-4	AO CHECK VALVE	30	2	B		EV	C	CS		1		
									ST	C	CS		1		
									VP	OC	24				
	"C" MAIN STEAM HEADER TRIP VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RC-160	11548-CBM-086B	2 OF 3	D-7	CHECK VALVE	3	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	PRIMARY GRADE WATER SUPPLY TO PRESSURIZER RELIEF TANK														
2-RC-HCV-2556A	11548-CBM-086A	1 OF 3	E-8	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
2-RC-HCV-2556B	11548-CBM-086A	2 OF 3	D-8	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
2-RC-HCV-2556C	11548-CBM-086A	3 OF 3	D-3	AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUNDARY VALVE														
2-RC-MOV-2535	11548-CBM-086B	1 OF 3	E-4	MO GATE	3	1	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE														
2-RC-MOV-2536	11548-CBM-086B	1 OF 3	D-4	MO GATE	3	1	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE														
2-RC-PCV-2455C	11548-CBM-086B	1 OF 3	D-3	AO PLUG	3	1	BC		EV	C	CS		3		
										O	CS		3		
									FS	C	CS		3		
									SP	O	60				
									ST	C	CS		3		
										O	CS		3		
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	PRESSURIZER POWER OPERATED PRESSURE CONTROL VALVE DISCHARGE TO PRESSURIZER RELIEF TANK														
2-RC-PCV-2456	11548-CBM-086B	1 OF 3	E-3	AO PLUG	3	1	BC		EV	C	CS		3		
										O	CS		3		
									FS	C	CS		3		
									SP	O	60				
									ST	C	CS		3		
										O	CS		3		
									VP	OC	24				
	PRESSURIZER POWER OPERATED PRESSURE CONTROL VALVE DISCHARGE TO PRESSURIZER RELIEF TANK														
2-RC-SOV-200A1	11548-CBM-086A	3 OF 3	B-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
2-RC-SOV-200A2	11548-CBM-086A	3 OF 3	A-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
2-RC-SOV-200B1	11548-CBM-086A	3 OF 3	B-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RC-SOV-200B2	11548-CBM-086A	3 OF 3	A-5	SO GATE	1	1	B		EV	C	CS		17		
										O	CS		17		
									FS	C	CS		17		
									ST	C	CS		17		
										O	CS		17		
									VP	OC	24				
	REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY														
2-RC-SV-2551A	11548-CBM-086B	1 OF 3	E-6	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
2-RC-SV-2551B	11548-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
2-RC-SV-2551C	11548-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6	1	C		SP	O	60				
	PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK														
2-RC-TV-2519A	11548-CBM-086B	2 OF 3	D-7	AO GATE	3	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRIMARY GRADE WATER SUPPLY TO PRT-#2 RCP SEAL STANDPIPES & FLUSH CONNECT, OUT CONT ISO VLV														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RH-005	11548-CBM-087A	1 OF 2	E-5	CHECK VALVE	10	2	C		CV	C	CS		4		
										O	CS		4		
	"B" RHR PUMP DISCHARGE CHECK VALVE														
2-RH-011	11548-CBM-087A	1 OF 2	E-7	CHECK VALVE	10	2	C		CV	C	CS		4		
										O	CS		4		
	"A" RHR PUMP DISCHARGE CHECK VALVE														
2-RH-047	11548-CBM-087A	2 OF 2	C-3	CHECK VALVE	10	1	C		CV	C	RR			26	
										O	CS		4		
	RHR DISCHARGE TO LOOP 2 COLD LEG CHECK VALVE														
2-RH-108	11548-CBM-087A	2 OF 2	E-3	MANUAL GATE	6	2	AE	CIV	LT	C	OPB				
	RHR SUPPLY ISOLATION TO REFUEL WATER STORAGE TANK, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-RH-MOV-2700	11548-CBM-087A	1 OF 2	A-5	MO GATE	14	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
2-RH-MOV-2701	11548-CBM-087A	1 OF 2	A-4	MO GATE	14	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
2-RH-MOV-2720A	11548-CBM-087A	2 OF 2	C-3	MO GATE	10	2	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR RETURN ISOLATION TO "B" ACCUMULATOR DISCHARGE LINE														
2-RH-MOV-2720B	11548-CBM-087A	2 OF 2	B-3	MO GATE	10	1	B		EV	O	RR			18	
									ST	O	RR			18	
									VP	OC	24				
	RHR RETURN ISOLATION TO "C" ACCUMULATOR DISCHARGE LINE														
2-RH-RV-2721	11548-CBM-087A	2 OF 2	D-4	RELIEF VALVE	3	2	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	RHR SYSTEM RELIEF VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RL-003	11548-CBM-118A	3 OF 3	D-7	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM RP PUMPS TO REACTOR CAVITY, OUTSIDE CONT ISOLATION VALVE														
2-RL-005	11548-CBM-118A	3 OF 3	D-6	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM RP PUMPS TO REACTOR CAVITY, INSIDE CONT ISOLATION VALVE														
2-RL-013	11548-CBM-118A	3 OF 3	B-7	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM REACTOR CAVITY TO RP PUMPS, INSIDE CONT ISOLATION VALVE														
2-RL-015	11548-CBM-118A	3 OF 3	B-7	MAN DIAPHRAGM	3	2	AE	CIV	LT	C	OPB				
	REFUELING PURIFICATION FROM REACTOR CAVITY TO RP PUMPS, OUTSIDE CONT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RM-003	11548-CBM-130B	1 OF 1	B-5	CHECK VALVE	0.75	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	RETURN TO CONTAINMENT FROM RADIATION MONITORING CABINET, INSIDE CONT ISOL CHECK VALVE														
2-RM-TV-200A	11548-CBM-130B	1 OF 1	B-4	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	RETURN ISOLATION FROM AIR RADIATION MONITOR TO CONTAINMENT, OUTSIDE CONT ISOLATION VALVE														
2-RM-TV-200B	11548-CBM-130B	1 OF 1	F-8	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, OUTSIDE CONT ISOLATION VALVE														
2-RM-TV-200C	11548-CBM-130B	1 OF 1	E-8	AO GATE	0.75	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, INSIDE CONT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RS-011	11548-CBM-084B	2 OF 2	E-5	CHECK VALVE	10	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"B" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-RS-017	11548-CBM-084B	2 OF 2	D-5	CHECK VALVE	10	2	AC	CIV	CV	C	RR			17	
										O	RR			17	
									LT	C	OPB				
	"A" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-RS-MOV-255A	11548-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLATION VALVE FROM CONTAINMENT SUMP														
2-RS-MOV-255B	11548-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLATION VALVE FROM CONTAINMENT SUMP														
2-RS-MOV-256A	11548-CBM-084B	2 OF 2	D-6	MO BFLY	10	2	A	CIV	EV	C	03				
										O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP DISCHARGE ISOLATION, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-RS-MOV-256B	11548-CBM-084B	2 OF 2	E-6	MO BFLY	10	2	A	CIV	EV	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RS-MOV-256B	11548-CBM-084B	2 OF 2	E-6	MO BFLY	10	2	A	CIV	EV	O	03				
									LT	C	OPB				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" OUTSIDE RECIRC SPRAY PUMP DISCHARGE ISOLATION, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RT-02	11548-CBM-124A	1 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
2-RT-06	11548-CBM-124A	1 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
2-RT-21	11548-CBM-124A	2 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
2-RT-25	11548-CBM-124A	2 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
2-RT-40	11548-CBM-124A	3 OF 4	E-7	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
2-RT-44	11548-CBM-124A	3 OF 4	E-6	MANUAL GLOBE	3	2	AE	CIV	LT	C	OPB				
	STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SA-081	11548-CBM-075E	1 OF 1	B-6	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, INSIDE CONTAINMENT ISOLATION VALVE														
2-SA-082	11548-CBM-075E	1 OF 1	B-6	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-025	11548-CBM-089A	1 OF 3	E-5	CHECK VALVE	8	2	AC		CV	C	RR			5	
										O	RR			5	
									LT	C	24	2			
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER														
2-SI-032	11548-CBM-089B	1 OF 4	E-3	MAN GLOBE	1	2	AE	CIV	LT	C	OPB				
	ACCUMULATOR MAKEUP LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SI-046A	11548-CBM-089A	1 OF 3	A-3	CHECK VALVE	12	2	C		CV	C	RR			2	
										O	RR			2	
	RWST SUPPLY CHECK VALVE TO "A" LOW HEAD SI PUMP SUCTION														
2-SI-046B	11548-CBM-089A	1 OF 3	B-3	CHECK VALVE	12	2	C		CV	C	RR			2	
										O	RR			2	
	RWST SUPPLY CHECK VALVE TO "B" LOW HEAD SI PUMP SUCTION														
2-SI-047	11548-CBM-089A	1 OF 3	B-5	CHECK VALVE	12	2	C		CV	C	RR			14	
										O	RR			14	
	"B" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT														
2-SI-050	11548-CBM-089A	1 OF 3	C-4	CHECK VALVE	10	2	C		CV	C	RR			2	
										O	RR			2	
	"B" LOW HEAD SI PUMP DISCHARGE CHECK VALVE														
2-SI-053	11548-CBM-089A	2 OF 3	B-4	CHECK VALVE	2	2	C		CV	C	RR			2	
										O	03				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK														
2-SI-056	11548-CBM-089A	1 OF 3	B-7	CHECK VALVE	12	2	C		CV	C	RR			14	
										O	RR			14	
	"A" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT														
2-SI-061	11548-CBM-089A	2 OF 3	B-5	CHECK VALVE	2	2	C		CV	C	RR			2	
										O	03				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK														
2-SI-073	11548-CBM-089A	2 OF 3	E-7	MAN GLOBE	0.75	2	AE	CIV	LT	C	OPB				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	ACCUMULATOR TEST LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SI-079	11548-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
2-SI-082	11548-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
2-SI-085	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	RCS COLD LEG SI ADMISSION CHECK VALVE														
2-SI-088	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
2-SI-091	11548-CBM-089B	4 OF 4	C-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
2-SI-094	11548-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	RCS HOT LEG SI ADMISSION CHECK VALVE														
2-SI-107	11548-CBM-089B	1 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"A" ACCUMULATOR DISCHARGE CHECK VALVE														
2-SI-109	11548-CBM-089B	1 OF 4	B-8	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-128	11548-CBM-089B	2 OF 4	B-6	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"B" ACCUMULATOR DISCHARGE CHECK VALVE														
2-SI-130	11548-CBM-089B	2 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
2-SI-145	11548-CBM-089B	3 OF 4	B-5	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"C" ACCUMULATOR DISCHARGE CHECK VALVE														
2-SI-147	11548-CBM-089B	3 OF 4	B-7	CHECK VALVE	12	1	C		CV	C	RR			3	
										O	RR			3	
	"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
2-SI-224	11548-CBM-089B	4 OF 4	F-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE														
2-SI-225	11548-CBM-089B	4 OF 4	E-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE														
2-SI-226	11548-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
2-SI-227	11548-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
2-SI-228	11548-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	C		CV	C	RR			4	
										O	RR			4	

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
2-SI-229	11548-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE														
2-SI-235	11548-CBM-089B	4 OF 4	F-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
2-SI-236	11548-CBM-089B	4 OF 4	E-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
2-SI-237	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	2	1	C		CV	C	RR			4	
										O	RR			4	
	HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE														
2-SI-238	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
2-SI-239	11548-CBM-089B	4 OF 4	C-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
2-SI-240	11548-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	C		CV	C	RR			4	
										O	RR			4	
	LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
2-SI-241	11548-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														

VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-242	11548-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
2-SI-243	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C	CS			4	
										O	RR			4	
									LT	C	24				
	LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
2-SI-304	11548-CBM-089B	1 OF 4	F-3	CHECK VALVE	1	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	NITROGEN SUPPLY TO ACCUMULATORS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
2-SI-327	11548-CBM-089A	1 OF 3	C-6	CHECK VALVE	10	2	C		CV	C	RR			2	
										O	RR			2	
	"A" LOW HEAD SI PUMP DISCHARGE CHECK VALVE														
2-SI-400	11548-CBM-089A	1 OF 3	E-4	CHECK VALVE	10	2	C		CV	C	RR			5	
										O	RR			5	
	RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER														
2-SI-MOV-2842	11548-CBM-089A	3 OF 3	D-7	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		13		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS ISOLATION VALVE														
2-SI-MOV-2860A	11548-CBM-089A	1 OF 3	B-7	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-MOV-2860B	11548-CBM-089A	1 OF 3	B-5	MO GATE	12	2	B		EV	O	03				
									ST	O	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP														
2-SI-MOV-2862A	11548-CBM-089A	1 OF 3	A-3	MO GATE	12	2	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP SUCTION FROM RWST														
2-SI-MOV-2862B	11548-CBM-089A	1 OF 3	B-3	MO GATE	12	2	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP SUCTION FROM RWST														
2-SI-MOV-2863A	11548-CBM-089A	2 OF 3	C-5	MO GATE	8	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"A" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS														
2-SI-MOV-2863B	11548-CBM-089A	2 OF 3	D-3	MO GATE	8	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" LOW HEAD SAFETY INJECTION PUMP SUPPLY ISOLATION TO CHARGING PUMPS														
2-SI-MOV-2864A	11548-CBM-089A	2 OF 3	D-6	MO GATE	10	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"A" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE														
2-SI-MOV-2864B	11548-CBM-089A	2 OF 3	D-4	MO GATE	10	2	B		EV	C	03				
										O	03				
									ST	C	03				
										O	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE														
2-SI-MOV-2865A	11548-CBM-089B	1 OF 4	C-7	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"A" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
2-SI-MOV-2865B	11548-CBM-089B	2 OF 4	C-6	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"B" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
2-SI-MOV-2865C	11548-CBM-089B	3 OF 4	C-5	MO GATE	12	2	B		EV	C	CS		18		
										O	CS		18		
									ST	C	CS		18		
										O	CS		18		
									VP	OC	24				
	"C" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG														
2-SI-MOV-2867C	11548-CBM-089A	3 OF 3	F-6	MO GATE	3	2	B		EV	C	CS		10		
										O	CS		10		
									ST	C	CS		10		
										O	CS		10		
									VP	OC	24				
	BORON INJECTION TANK OUTLET TO RCS COLD LEG ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-MOV-2867D	11548-CBM-089A	3 OF 3	E-6	MO GATE	3	2	B		EV	C	CS		10		
										O	CS		10		
									ST	C	CS		10		
										O	CS		10		
									VP	OC	24				
	BORON INJECTION TANK OUTLET TO RCS COLD LEG ISOLATION VALVE														
2-SI-MOV-2869A	11548-CBM-089A	3 OF 3	C-7	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		13		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS ISOLATION VALVE														
2-SI-MOV-2869B	11548-CBM-089A	3 OF 3	E-4	MO GATE	3	2	B		EV	C	CS		13		
										O	CS		19		
									ST	C	CS		13		
										O	CS		13		
									VP	OC	24				
	HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS ISOLATION VALVE														
2-SI-MOV-2885A	11548-CBM-089A	2 OF 3	B-5	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
2-SI-MOV-2885B	11548-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
2-SI-MOV-2885C	11548-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-MOV-2885C	11548-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A		ST	C	03				
									VP	OC	24				
	"B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
2-SI-MOV-2885D	11548-CBM-089A	2 OF 3	B-5	MO GATE	2	2	A		EV	C	03				
									LT	C	24	2			
									ST	C	03				
									VP	OC	24				
	"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
2-SI-MOV-2890A	11548-CBM-089A	2 OF 3	C-7	MO GATE	10	2	B		EV	C	CS		19		
										O	CS		19		
									ST	C	CS		19		
										O	CS		19		
									VP	OC	24				
	"A" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP ISOLATION VALVE														
2-SI-MOV-2890B	11548-CBM-089A	2 OF 3	E-7	MO GATE	10	2	B		EV	C	CS		19		
										O	CS		19		
									ST	C	CS		19		
										O	CS		19		
									VP	OC	24				
	"B" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP ISOLATION VALVE														
2-SI-MOV-2890C	11548-CBM-089A	2 OF 3	D-7	MO GATE	10	2	B		EV	C	CS		9		
										O	CS		9		
									ST	C	CS		9		
										O	CS		9		
									VP	OC	24				
	LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP ISOLATION VALVE														
2-SI-RV-2845A	11548-CBM-089A	2 OF 3	E-6	RELIEF VALVE	1	2	C		SP	O	120				
	"A" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
2-SI-RV-2845B	11548-CBM-089A	2 OF 3	E-5	RELIEF VALVE	1	2	C		SP	O	120				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	LOW HEAD SI HEADER TO COLD LEG RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
2-SI-RV-2845C	11548-CBM-089A	2 OF 3	E-5	RELIEF VALVE	1	2	C		SP	O	120				
	"B" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
2-SI-RV-2858A	11548-CBM-089B	1 OF 4	E-7	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
2-SI-RV-2858B	11548-CBM-089B	2 OF 4	E-6	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
2-SI-RV-2858C	11548-CBM-089B	3 OF 4	E-5	RELIEF VALVE	0	2	C		SP	O	120				
	SI ACCUMULATOR RELIEF VALVE														
2-SI-TV-200	11548-CBM-089A	3 OF 3	B-7	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	NITROGEN SUPPLY TO ACCUMULATORS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SI-TV-201A	11548-CBM-089B	1 OF 4	C-3	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, INSIDE CONTAINMENT ISOLATION VALVE														
2-SI-TV-201B	11548-CBM-089B	1 OF 4	B-2	AO GATE	1	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SI-TV-202A	11548-CBM-089A	1 OF 3	E-7	AO GATE	8	2	B		EV	O	03				
									FS	O	03				
									ST	O	03				
									VP	OC	24				
	UNIT 1 RWST TO UNIT 2 RWST CROSS TIE														
2-SI-TV-202B	11548-CBM-089A	1 OF 3	E-7	AO GATE	8	2	B		EV	O	03				
									FS	O	03				
									ST	O	03				
									VP	OC	24				
	UNIT 1 RWST TO UNIT 2 RWST CROSS TIE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SS-TV-200A	11548-CBM-082A	2 OF 3	F-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER LIQUID SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-200B	11548-CBM-082A	2 OF 3	F-6	AO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER LIQUID SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-201A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER VAPOR SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-201B	11548-CBM-082A	2 OF 3	E-6	AO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER VAPOR SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-202A	11548-CBM-082A	2 OF 3	D-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	REACTOR COOLANT COLD LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-202B	11548-CBM-082A	2 OF 3	D-6	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-203A	11548-CBM-082A	2 OF 3	F-7	SO GATE	0.375	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-203B	11548-CBM-082A	2 OF 3	F-6	SO GATE	0.375	2	AE	CIV	LT	C	OPB				
									VP	OC	24				
	RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-204A	11548-CBM-082A	2 OF 3	D-7	SO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-204B	11548-CBM-082A	2 OF 3	C-6	AO GATE	0.375	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-206A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SS-TV-206A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.375	1	A	CIV	ST	C	03				
									VP	OC	24				
	REACTOR COOLANT HOT LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE														
2-SS-TV-206B	11548-CBM-082A	2 OF 3	E-6	SO GATE	0.375	1	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	REACTOR COOLANT HOT LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SV-TV-202A	11548-CBM-066A	2 OF 3	E-4	AO GATE	6	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	CONDENSER AIR REMOVAL DISCHARGE TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-108	11548-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP SERVICE WATER PUMP CHECK VALVE														
2-SW-113	11548-CBM-071B	1 OF 2	B-7	CHECK VALVE	2	3	C		CV	C	03				
										O	03				
	CHARGING PUMP SERVICE WATER PUMP CHECK VALVE														
2-SW-206	11548-CBM-071A	3 OF 3	E-8	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER														
2-SW-208	11548-CBM-071A	3 OF 3	E-8	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER														
2-SW-246	11548-CBM-071A	3 OF 3	D-8	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
2-SW-247	11548-CBM-071A	3 OF 3	D-7	CHECK VALVE	3	3	C		CV	C	RR			22	
										O	RR			22	
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
2-SW-248	11548-CBM-071A	3 OF 3	D-7	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
2-SW-249	11548-CBM-071A	3 OF 3	D-6	CHECK VALVE	3	3	C		CV	C	RR			22	
										O	RR			22	
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
2-SW-250	11548-CBM-071A	3 OF 3	D-6	CHECK VALVE	3	3	C		CV	C	03				
										O	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
2-SW-251	11548-CBM-071A	3 OF 3	D-6	CHECK VALVE	3	3	C		CV	C	RR			22	
										O	RR			22	
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
2-SW-252	11548-CBM-071A	3 OF 3	D-5	CHECK VALVE	3	3	C		CV	C	03				
										O	03				
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE														
2-SW-253	11548-CBM-071A	3 OF 3	D-5	CHECK VALVE	3	3	C		CV	C	RR			22	
										O	RR			22	
	RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE														
2-SW-442	11548-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	C		CV	C	RR			25	
										O	03				
	CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE														
2-SW-445	11548-CBM-071B	1 OF 2	B-6	CHECK VALVE	2	3	C		CV	C	RR			25	
										O	03				
	CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE														
2-SW-MOV-201A	11548-CBM-071A	3 OF 3	B-4	MO BFLY	36	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE														
2-SW-MOV-201B	11548-CBM-071A	3 OF 3	B-4	MO BFLY	36	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE														
2-SW-MOV-202A	11548-CBM-071A	2 OF 3	D-6	MO BFLY	42	3	B		EV	C	03				
									ST	C	03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-202A	11548-CBM-071A	2 OF 3	D-6	MO BFLY	42	3	B		VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS														
2-SW-MOV-202B	11548-CBM-071A	2 OF 3	D-5	MO BFLY	42	3	B		EV	C	03				
									ST	C	03				
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS														
2-SW-MOV-203A	11548-CBM-071A	3 OF 3	B-8	MO BFLY	30	3	B		EV	O	RR			23	
									ST	O	RR			23	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
2-SW-MOV-203B	11548-CBM-071A	3 OF 3	B-8	MO BFLY	30	3	B		EV	O	RR			23	
									ST	O	RR			23	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
2-SW-MOV-203C	11548-CBM-071A	3 OF 3	B-3	MO BFLY	30	3	B		EV	O	RR			23	
									ST	O	RR			23	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
2-SW-MOV-203D	11548-CBM-071A	3 OF 3	B-2	MO BFLY	30	3	B		EV	O	RR			23	
									ST	O	RR			23	
									VP	OC	24				
	SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS														
2-SW-MOV-204A	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	

VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-204A	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	B		VP	OC	24				
	SERVICE WATER SUPPLY TO "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-204B	11548-CBM-071A	3 OF 3	D-6	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-204C	11548-CBM-071A	3 OF 3	D-5	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-204D	11548-CBM-071A	3 OF 3	D-4	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER SUPPLY TO "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-205A	11548-CBM-071A	3 OF 3	D-8	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER RETURN FROM "A" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-205B	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-205B	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	B		ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER RETURN FROM "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-205C	11548-CBM-071A	3 OF 3	D-6	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER RETURN FROM "C" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-MOV-205D	11548-CBM-071A	3 OF 3	D-5	MO BFLY	24	3	B		EV	C	RR			23	
										O	RR			23	
									ST	C	RR			23	
										O	RR			23	
									VP	OC	24				
	SERVICE WATER RETURN FROM "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE														
2-SW-TCV-208A	11548-CBM-071B	1 OF 2	E-7	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														
2-SW-TCV-208B	11548-CBM-071B	1 OF 2	E-5	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														
2-SW-TCV-208C	11548-CBM-071B	1 OF 2	E-4	AO GATE	1.5	3	B		EV	O	03				
									FS	O	03				
									ST	O	NA	1			

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VA-001	11548-CBM-083B	3 OF 3	F-3	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	VENT LINE FROM PRIMARY VENT POT, OUTSIDE CONTAINMENT ISOLATION VALVE														
2-VA-009	11548-CBM-083B	3 OF 3	F-4	MAN GATE	2	2	AE	CIV	LT	C	OPB				
	VENT LINE FROM PRIMARY VENT POT, INSIDE CONTAINMENT ISOLATION VALVE														

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VG-TV-209A	11548-CBM-083B	1 OF 3	E-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	VENT LINE ISOL FROM PRIMARY DRAINS TRANSFER TANK TO GAS STRIPPERS, INSIDE CONT ISOL VLV														
2-VG-TV-209B	11548-CBM-083A	2 OF 2	F-3	AO GATE	2	2	A	CIV	EV	C	03				
									FS	C	03				
									LT	C	OPB				
									ST	C	03				
									VP	OC	24				
	VENT LINE ISOL FROM PRIMARY DRAINS TRANSFER TANK TO GAS STRIPPERS, OUTSIDE CONT ISOL VLV														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VP-12	11548-CBM-066A	2 OF 3	F-4	CHECK VALVE	6	2	AC	CIV	CV	C	RR			6	
										O	RR			6	
									LT	C	OPB				
	CONDENSER AIR REMOVAL DISCHARG TO CONTAINMENT INSIDE CONTAIN ISOLATION CHECK VALVE														

SURRY UNIT 2
FOURTH INSERVICE TESTING INTERVAL
VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VS-MOV-200A	11548-CBB-006A	1 OF 2	C-7	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE SUPPLY, INSIDE CONTAINMENT ISOLATION VALVE														
2-VS-MOV-200B	11548-CBB-006A	1 OF 2	C-8	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE SUPPLY, OUTSIDE CONTAINMENT ISOLATION														
2-VS-MOV-200C	11548-CBB-006A	1 OF 2	D-7	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE EXHAUST, INSIDE CONTAINMENT ISOLATION VALVE														
2-VS-MOV-200D	11548-CBB-006A	1 OF 2	D-8	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE EXHAUST, OUTSIDE CONTAINMENT ISOLATION														
2-VS-MOV-201	11548-CBB-006A	1 OF 2	D-7	MO BFLY	8	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PURGE BYPASS, OUTSIDE CONTAINMENT ISOLATION														
2-VS-MOV-202	11548-CBB-006A	1 OF 2	C-7	MO BFLY	18	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT VACUUM BREAKER														

4.5 VALVE TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements that are impractical for Surry Unit 2 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of code requirements is proposed.

RELIEF REQUEST V-1

System : Refer to Table V-1

Valve(s): Refer to Table V-1

Category: Refer to Table V-1

Class : Refer to Table V-1

Function: Refer to Table V-1

ISTC Code Requirements for Which Relief Is Requested

ISTC-5131 requires that the stroke time of active pneumatically operated valves shall be measured, a limiting value of full-stroke time specified by the owner, the valve stroke be measured to at least the nearest second, and any abnormality or erratic action be recorded and evaluated.

ISTC-5132 requires that measured stroke times be compared to the acceptance criteria in this section.

ISTC-5133 requires that corrective action be taken if the measured stroke times do not meet the acceptance criteria in ISTC-5122.

Basis for Relief (ISTC-5131, ISTC-5132 and ISTC-5133)

ISTC-1200(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves.

However, if these valves have a safety function to fail to an open or close position, then the testing requirements for power-operated valves are imposed. Code Case OMN-8 provides alternative rules for inservice testing of power-operated valves that are used for system control and have a fail safe safety function. Code Case OMN-8 is given below.

> Inquiry: What alternative requirements to those of ASME/ANSI OMa-1988, Part 10, para. 4.2 through OM Code-1995, ISTC 4.2 may be used for power-operated control valves that have only a fail safe safety function?

Reply: It is the opinion of the Committee that the requirements of ASME/ANSI OMa-1988, Part 10, para.4.2.1.4, Power-Operated Valve Stroke Testing; para. 4.2.1.8, Stroke Time Acceptance Criteria; and para. 4.2.1.9(b) need not be met. All other applicable requirements of para. 4.2 shall be met for ASME/ANSI OMa-1988, Part 10.

Further, the requirements of OM Code-1995, ISTC 4.2.4, Power-Operated Valve Stroke Testing; ISTC 4.2.8, Stroke Time Acceptance Criteria; and ISTC 4.2.9(b) need not be met. All other applicable requirements of the paragraph shall be met.

Any abnormality or erratic action experienced during valve exercising shall be recorded in the record of tests, and an evaluation shall be made regarding need for corrective action.

The power-operated control valves listed in Table V-1 have only a fail safe function. We propose applying the alternative rules described in Code Case OMN-8 to the control valves listed in Table V-1. This alternative to the requirements of ISTC-5131, ISTC-5132 and ISTC-5133 provides an acceptable level of quality and safety.

Alternate Testing Proposed

The control valves listed in Table V-1 will be tested to the requirements of Code Case OMN-8.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-5131, ISTC-5132 and ISTC-5133 identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

Table V-1

Valve Number	System	OM Category	ASME Class	Function
2-CC-LCV-201	Component Cooling	B	3	Charging Pump Seal Cooling Surge Tank Level Control Valve
2-CH-FCV-2113A	Chemical and Volume Control	B	3	Alternate Emergency Boration Line Flow Control Valve
2-CH-FCV-2114A	Chemical and Volume Control	B	3	Primary Grade Water Flow Control Valve
2-MS-RV-201A 2-MS-RV-201B 2-MS-RV-201C	Main Steam	B	2	Main Steam Header Discharge to Atmosphere Pressure Control Valves
2-SW-TCV-208A 2-SW-TCV-208B 2-SW-TCV-208C	Service Water	B	3	Service Water to Charging Pump Lube Oil Cooler Temperature Control Valves

RELIEF REQUEST V-2

System : Chemical and Volume Control and Safety Injection

Valve(s): 2-CH-MOV-2115B	2-SI-MOV-2885A
2-CH-MOV-2115D	2-SI-MOV-2885B
2-SI-25	2-SI-MOV-2885C
	2-SI-MOV-2885D

Category: A and A/C

Class : 2

Function: RWST Isolation Valves

ISTC Code Requirements for Which Relief Is Requested

ISTC-3630(f) requires that valves or valve combinations with leakage rates exceeding the values specified by the Owner shall be declared inoperable and either repaired or replaced.

Basis for Relief (ISTC-3630(f))

Valves 2-CH-MOV-2115B and D, and 2-SI-25 are in the supply line to the charging pumps from the RWST. Valves 2-SI-MOV-2885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

The RWST isolation valves work as a system of valves to protect the RWST from the contaminated sump water. Permissible valve leakage rates are based on each valve's possible contribution to the total allowable leakage rate to the RWST. When the leakages from each valve have been measured and summed, an individual valve's permissible leakage rate may have been exceeded but the overall allowable leakage to the RWST may not have been exceeded. In these cases, a repair or replacement may not be necessary because the system of isolation valves has been verified to be performing adequately.

In addition to repair or replacement as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate and hence the system function is satisfied. This evaluation should provide a high level of assurance that delaying the repair or replacement will not result in exceeding the overall limit before the next leak rate test. The evaluation should include a determination of the cause for the individual valve leakage. The evaluation should also address the effect of the degradation mechanism for the valve on the ability of the valve group to maintain overall leakage to the RWST below the overall allowable leakage rate during the subsequent 24 month interval. Evaluations will be documented and retained in plant records, and are available for subsequent review. This alternative to the requirements ISTC-3630(f) provides an acceptable level of quality and safety.

Alternate Testing Proposed

In addition to repair or replacement as corrective actions, an evaluation can be performed which demonstrates that even if a valve has exceeded its permissible leakage rate, the overall leakage rate to the RWST will be maintained below the overall allowable RWST leakage rate. No repair or replacement is necessary if the evaluation is performed and system leakage is projected to be maintained below the overall permissible leakage rate throughout the subsequent 24 month interval.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3630(f) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-3

System : Containment Spray

Valve(s): 2-CS-45

Category: C

Class : 2

Function: RWST Cooling System Isolation Check Valve

ISTC Code Requirements for Which Relief Is Requested

ISTC-5221(c)(3) - At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years.

Justification for Disassembly and Examination Test Frequency

This two inch check valve is on the refueling water refrigeration discharge piping that returns to the refueling water storage tank (RWST). To test the valve for closure, the cooling flow through the refrigeration units must be stopped, the valve isolated and the cooling system boundary breached. Restoring the RWST cooling system to operation after the system has been exposed to the atmosphere requires a lengthy venting process. During most of the year, the RWST cooling system runs continuously to maintain the RWST water temperature below 45oF per Technical Specification Section 3.4.A.3. Therefore, it is not practical to perform a quarterly closure test.

The valve is located about ten feet above the ground near the RWST and is very accessible. There are no vents or drains downstream of the valve. The upstream refrigeration units do have drains on the heat exchangers. However, RWST head would have to be used to supply the differential pressure across the check valve. This test configuration could provide a drainage path for the RWST if the check valve failed open and challenge the integrity of the RWST system. Considering the size of the valve (2"), it's accessibility and the problem of using RWST to perform a back pressure test, Surry Power Station has determined that the best method for verifying closure is to disassemble and examine the valve.

Basis for Relief (ISTC-5221(c)(3))

The disassembly and examination could be performed during refueling outages or while the plant is operating during cool weather when the need for RWST cooling is minimal. However, during the outage the RWST is involved in several major work and test activities that would be complicated by the disassembly and examination. For example, during the refueling operation water is pumped from the RWST to the reactor cavity via the low head safety injection (LHSI) pumps. The process is reversed when the new fuel is in place. Also, the RWST is used during the comprehensive pump tests for the LHSI pumps, the inside recirculation spray pumps, and the containment spray pumps. The RWST cooling system should be operable to support these work and test activities. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valve on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage.

Testing Frequency

The close position will be verified by disassembly and examination per the requirements of ISTC-5221(c) except that instead of performing the disassembly and examination during the fueling outage as required by ISTC-5221(c)(3), the disassembly and examination will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months. Normal operation of the RWST cooling system verifies that the valve opens.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-5221(c)(3) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-4

System : Chemical and Volume Control

Valve(s): 2-CH-225
2-CH-227
2-CH-229

Category: C

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valves

<u>ISTC Code Requirements for Which Relief Is Requested</u>

ISTC-3522(b) states that, "If exercising is not practicable during operation at power, it shall be performed during cold shutdowns."

ISTC-3522 (c) states that, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

<u>Basis for Relief from ISTC-3522(b) and (c)</u>

With the current piping configuration, the check valves cannot be back seat tested with flow. The valve bonnets are seal welded. The seal weld must be cut before the valve can be disassembled. Also, the lines contain a 7% boric acid solution. For these reasons disassembly is not the preferred method to verify the close position. The valves will be radiographed to verify that the disks are on the seat. Radiography creates a potential personnel hazard due to the use of a radioactive source. To reduce the number of times that test personnel are exposed to this hazard, the radiographs should be performed infrequently. Also, setup of the radioactive source, securing the area and performing the radiograph is a time consuming process that is impractical to perform every three months.

These valves are located in the auxiliary building basement at elevation 2 (2-CH-227 and 2-CH-229) and in the boric acid flats at elevation 13 (2-CH-225). Performing a radiograph requires that the surrounding area be cordoned off approximately two hours before the exposure, the area cleared of personnel, and access denied to personnel before and during the period of the exposure. The area must remain free of personnel from two to four hours depending on the success of the initial exposures. The restricted area for 2-CH-227 and 229 includes the auxiliary building basement. The restricted area for valve 2-CH-225 includes the boric acid flats and areas above the flats at elevation 27. Also, access to containment would be restricted.

Cold shutdown outages and reactor refueling outages are periods of high work activity. Outage work would be interrupted in a substantial portion of the auxiliary building during the preparation of the radiographs. Also, due to the increased number of workers on site during these outages, there is an increased risk of accidental exposure.

Alternate Testing Proposed for the Closed Position

The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdowns or reactor refuelings as required by ISTC-3522(b) and (c).

Testing Frequency

Check valves 2-CH-225, 227 and 229 will be full stroked exercised every quarter during normal operation when the reactor coolant boric acid concentration is above 100 ppm.

Valves 2-CH-227 and 229 are of the same manufacturer and model number, and are subject to similar service conditions. Valve 2-CH-227 is a two inch valve and valve 2-CH-229 is a one inch valve. These valves will be grouped together. To verify the close position, one valve will be radiographed each test interval. This sampling plan will follow the guidance described in NUREG-1482, Section 4.1.2. Valve 2-CH-225 is of a different manufacturer and will be radiographed every test interval to verify the close position. The close test will be performed while the plant is at power on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3522(b) and (c) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

RELIEF REQUEST V-5

System : Component Cooling

Valve(s): 2-CC-806

Category: C

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Makeup Valve

ISTC Code Requirements for Which Relief Is Requested

ISTC-3522(b) states that, "If exercising is not practicable during operation at power, it shall be performed during cold shutdowns."

ISTC-3522 (c) states that, "If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages."

Basis for Relief from ISTC-3522(b) and (c)

With the current piping configuration, the check valve cannot be back pressure tested with flow. There is no isolation valve upstream so a freeze seal is necessary to isolate the valve for disassembly. The preferred examination method is to radiograph the valve to verify that the disk is on the seat. Radiography creates a potential personnel hazard due to the use of a radioactive source. To reduce the number of times that test personnel are exposed to this hazard, the radiographs should be performed infrequently. Also, setup of the radioactive source, securing the area and performing the radiograph is a time consuming process that is impractical to perform every three months.

This valve is located in the auxiliary building basement at elevation 2. Performing a radiograph requires that the surrounding area be cordoned off approximately two hours before the exposure, the area cleared of personnel, and access denied to personnel before and during the period of the exposure. The area must remain free of personnel from two to four hours depending on the success of the initial exposures. The restricted area includes the auxiliary building basement.

Cold shutdown outages and reactor refueling outages are periods of high work activity. Outage work would be interrupted in a substantial portion of the auxiliary building during the preparation of the radiograph. Also, due to the increased number of workers on site during these outages, there is an increased risk of accidental exposure.

Alternate Testing Proposed for the Closed Position

The best time to perform the radiographs would be during normal plant operation when work activities and the number of workers are at a minimum. To reduce the number of times that test personnel are exposed to the hazard of performing the radiographs, the radiographs will be performed on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months, instead of during cold shutdown outages or reactor refueling outages as required by ISTC-3522(b) and (c).

Testing Frequency

This valve will be tested to the full open position every reactor refueling. The close test will be performed while the plant is at power on a reactor refueling frequency which is nominally once every 18 months but no greater than once every 24 months.

Using the provisions of this relief request as an alternative to the specific requirements of ISTC-3522(b) and (c) identified above will provide adequate indication of valve performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTC Code requirements identified in this relief request.

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

ISTC-3521 and ISTC-3522 allow for the full stroke exercising of valves during Cold Shutdown (but not more frequently than every three months) if the valves cannot be exercised during normal operation. Therefore, no request for relief from testing every three months is necessary.

ISTC-9200 does require that the owner specifically identify these valves. The cold shutdown justifications identify and provide the technical basis for valves exercised during cold shutdown but not during normal operation.

COLD SHUTDOWN JUSTIFICATION CSV-1

System : Main Steam

Valve(s): 2-MS-TV-201A
2-MS-TV-201B
2-MS-TV-201C

Category: B

Class : 2

Function: Main Steam Line Trip Valves

Cold Shutdown Justification

Full stroke or part stroke exercising of these valves during power operation could result in a turbine and reactor trip.

Testing Frequency

These valves will be full stroke exercised every cold shutdown but not more frequently than once every three months.

> Note: The technical specification acceptance criteria are more limiting than the standard Code test criteria because the technical specification requires the measurement of elapsed time from the manual initiation of steam line isolation to initiation of main trip valve motion (must be less than or equal to 4.0 seconds) and the measurement of elapsed time from full open to full close (must be less than or equal to 5.0 seconds). If either of the limiting times is exceeded, the valve fails the test.
>
> The Code requires the measurement of elapsed time from initiation of steam line isolation to full valve closure, which is a less conservative test.

COLD SHUTDOWN JUSTIFICATION CSV-2

System : Component Cooling

Valve(s): 2-CC-TV-205A
2-CC-TV-205B
2-CC-TV-205C

Category: B

Class : 3

Function: Component Cooling Water Return from Reactor Coolant Pump Isolation Valves

Cold Shutdown Justification

Exercising valves 2-CC-TV-205A, B and C during normal operation would isolated the reactor coolant pump (RCP) component cooling water return headers. These headers collect cooling water from the RCP upper and lower bearing lube oil coolers, the shroud cooling coils and the stator coolers. Loss of cooling water to these pumps can be damaging, even for short periods of time. Therefore, the corresponding RCP must be secured before the header isolation trip valve is exercised. The valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

These valves will be full-stroke exercised to the close position every cold shutdown when the corresponding RCP is secured but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-3

System : Reactor Coolant

Valve(s): 2-RC-PCV-2455C
2-RC-PCV-2456

Category: BC

Class : 1

Function: Pressurizer Power Operated Relief Valves

Cold Shutdown Justification

These pressurizer power operated relief valves have shown a high probability of sticking open while being exercised during power operation. Also, these valves are not required for overpressure protection unless the primary system temperature is under 350 °F per Technical Specification Paragraph 3.1.G.1.c(4).

Testing Frequency

These valves will be tested on approach to Cold Shutdown.

COLD SHUTDOWN JUSTIFICATION CSV-4

System : Residual Heat Removal

Valve(s): 2-RH-5
2-RH-11
2-RH-47

Category: C

Class : 2

Function: RHR Pump Discharge Check Valve

Cold Shutdown Justification

These valves can only be exercised to the open position and verified closed during the testing of RHR pumps 2-RH-P-1A and 1B (refer to Relief Request P-2). The low pressure pumps take suction from and discharge to the reactor coolant system which operates at 2235 psig. This pressure is well above the operating pressure of the pumps; therefore, testing during normal operation is not possible.

Testing Frequency

Valves 2-RH-5 and 11 will be tested to the full open position and the closed position, and valve 2-RH-47 will be tested to the full open position during the testing of the RHR pumps (refer to Relief Request P-2).

COLD SHUTDOWN JUSTIFICATION CSV-5

System : Chemical and Volume Control

Valve(s): 2-CH-MOV-2115C
2-CH-MOV-2115E

Category: B

Class : 2

Function: Charging Pump Suction from Volume Control Tanks

Cold Shutdown Justification

Partial or full stroke exercising these valves during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in Reactor Coolant System boron inventory, which would cause a plant transient.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-6

System : Chemical and Volume Control

Valve(s): 2-CH-MOV-2381

Category: A

Class : 2

Function: Reactor Coolant Pump Seal Water Return

Cold Shutdown Justification:

Closure of this valve with Reactor Coolant Pumps in operation will cause a loss of seal flow resulting in possible pump seal damage.

Testing Frequency

This valve will be tested to the close position every cold shutdown when the reactor coolant pumps are secured but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-7

System : Chemical and Volume Control

Valve(s):	2-CH-TV-2204A	2-CH-LCV-2460A
	2-CH-TV-2204B	2-CH-LCV-2460B

Category: A (2-CH-TV-2204A, B) and B (2-CH-LCV-2460A, B)

Class : 1 (2-CH-LCV-2460A, B) and 2 (2-CH-TV-2204A, B)

Function: Reactor Coolant System Letdown Isolation Trip and Level Control Valves

Cold Shutdown Justification

Exercising these valves during power operation interrupts letdown flow from the reactor coolant system (RCS) to the volume control tank. If the valves should fail closed, reactor coolant inventory control would be lost.

The pressurizer level control program controls reactor coolant inventory by regulating the operation of the charging flow control valve so that the charging input flow to the RCS and reactor coolant pump seal injection flow into the RCS matches letdown flow.

Also, exercising these valves during normal operation will interrupt letdown flow through the regenerative heat exchanger. This flow interruption would allow a slug of relatively cool charging water to thermal shock the nozzle connecting the 3" charging line to the 27" loop 2 cold leg injection line.

The valve controllers do not allow for a part stroke exercise test.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-8

System : Chemical and Volume Control

Valve(s): 2-CH-MOV-2289A
2-CH-MOV-2289B

Category: A (2-CH-MOV-2289A) and B (2-CH-MOV-2289B)

Class : 2

Function: Normal Charging Header Isolation

Cold Shutdown Justification

Failure of these valves in the close position during exercising would cause a loss of charging flow and could result in an inability to maintain reactor coolant inventory.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-9

System : Safety Injection

Valve(s): 2-SI-MOV-2890C

Category: A

Class : 2

Function: Low Head Safety Injection to Reactor Coolant System Cold Legs

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.8, during power operation, the A. C. power shall be removed from 2-SI-MOV-2890C with the valve in the open position. If this valve was stroked during power operation and failed in the close position, the Low Head Safety Injection System would be rendered inoperable.

Testing Frequency

This valve will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-10

System : Safety Injection

Valve(s): 2-SI-MOV-2867C
2-SI-MOV-2867D

Category: A

Class : 2

Function: High Head Safety Injection Isolation

Cold Shutdown Justification

These valves cannot be partial or full stroke exercised during power operation. Opening these valves would allow excess charging flow into the Reactor Coolant System causing a reactivity transient.

Testing Frequency

These valves will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-11

System : Chemical and Volume Control

Valve(s): 2-CH-MOV-2350

Category: B

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valve

Cold Shutdown Justification

Valve 2-CH-MOV-2350 can be full stroke exercised during normal operation when the boric acid concentration in the reactor coolant system is above 100 ppm. During power operation when the concentration of boric acid is low, the addition of boric acid will produce an undesirable transient in reactor power. Low concentrations of boric acid occur near the end of the fuel cycle. The valve controller does not allow for part stroke exercising.

Testing Frequency

Valve 2-CH-MOV-2350 will be full stroke exercised during normal operation when the reactor coolant boric acid concentration is above 100 ppm.

COLD SHUTDOWN JUSTIFICATION CSV-12

System : Steam Generator Blowdown

Valve(s): 2-BD-TV-200A	2-BD-TV-200D
2-BD-TV-200B	2-BD-TV-200E
2-BD-TV-200C	2-BD-TV-200F

Category: B

Class : 2

Function: Steam Generator Blowdown Isolation

Cold Shutdown Justification

Closing these valves during power operation causes the downstream piping to become empty due to drainage and water flashing to steam. When the valves reopen, a flow surge could occur which automatically isolates the inner valves due to high flow. Then a containment entry is necessary to reset these valves and upon reopening the process may occur again.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-13

System : Safety Injection

Valve(s): 2-SI-MOV-2842
2-SI-MOV-2869A
2-SI-MOV-2869B

Category: A

Class : 2

Function: High Head Safety Injection to reactor Coolant System

<u>Cold Shutdown Justification</u>

These valves cannot be partial or full stroke exercised during power operation. Opening these valves would allow excess charging flow into the Reactor Coolant System causing a reactivity transient and possible thermal shock to the High Head Safety Injection System.

Also, according to Technical Specification 3.3.A.9, A. C. power shall be removed with the valves in the close position during power operation.

<u>Testing Frequency</u>

These valves will be tested to the full open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-14

System : Component Cooling

Valve(s): 2-CC-TV-220A 2-CC-TV-240A
2-CC-TV-220B 2-CC-TV-240B
2-CC-TV-220C

Category: B

Class : 3

Function: Component Cooling Return from Reactor Coolant Pump Thermal Barrier Isolation Valves

Cold Shutdown Justification

Exercising these valves during normal operation would isolate component cooling water to the reactor coolant pump thermal barriers. Cooling water must be available to the reactor coolant pump thermal barriers when the reactor coolant system temperature is above 200°F. Cold shutdown is entered when the reactor coolant system temperature drops below 200°F. The valve controllers do not allow for a part stroke exercise test.

Testing Frequency

These valves will be tested to the close position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-15

System : Feedwater

Valve(s): 2-FW-FCV-2478	2-FW-HCV-255A
2-FW-FCV-2488	2-FW-HCV-255B
2-FW-FCV-2498	2-FW-HCV-255C

Category: B

Class : NC

Function: Main Feedwater Regulating and Regulating Bypass Isolation Valves

Cold Shutdown Justification

These valves are in positions required to sustain power operation. Full stroke exercising the valves would result in a reactor trip. The main feedwater regulating valves 2-FW-FCV-2478, 2488 and 2498 move during normal operation as they perform their regulating function. In order to perform a partial stroke test during normal operation, the plant would have to reduce power to cause the valve disks to move. Reducing power for the purpose of performing an exercise test is considered impractical according to the NRC response to Comment 2.4.5-1 in NUREG-1482, Appendix G.

The bypass valves 2-FW-HCV-255A, B and C are used only during plant startup. During this startup period, their safety function is to close. During normal operation, these valves remain closed and are passive in the close position. Therefore, the bypass valves do not need to be partial stroke tested every three months.

Testing Frequency

These valves will be full stroke exercised every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-16

System : Component Cooling

Valve(s): 2-CC-LCV-201

Category: B

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Level Control Valve

Cold Shutdown Justification

This valve must open to maintain the level in the charging pump seal water surge tank and must close to prevent overflowing the surge tank and potentially draining the surge tank through the over flow line. The valve fails close on lose of operating air.

Valve position is determined solely from tank level. In order to manipulate the valve for testing, the surge tank must be isolated. However, the surge tank provides the NPSH for the charging pump cooling water pumps and it should not be isolated from the system during normal operation when component cooling water for the charging pumps is required.

Testing Frequency

This valve will be exercise to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-17

System : Reactor Coolant

Valve(s): 2-RC-SOV-200A-1
2-RC-SOV-200A-2
2-RC-SOV-200B-1
2-RC-SOV-200B-2

Category: B

Class : 1

Function: Head Vent for Reactor Vessel

Cold Shutdown Justification

These valves isolate the reactor vessel from containment atmosphere. Partial or full stroke exercising the valves during normal operation or during cold shutdowns where the reactor coolant system is pressurized could result in the release of uncontrolled contamination to containment.

Testing Frequency

These valves will be exercise to the open and close positions during cold shutdowns when the reactor coolant system is not pressurized but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-18

System : Safety Injection

Valve(s): 2-SI-MOV-2865A
2-SI-MOV-2865B
2-SI-MOV-2865C

Category: B

Class : 2

Function: Accumulator Discharge Isolation Valves to RCS Cold Leg

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.10, the accumulator discharge isolation valves 1-SI-MOV-1865A, B and C shall be blocked open by de-energizing the valve motor operators when the reactor coolant system pressure is greater than 1000 psig. These valves could be called upon to close when the reactor coolant system pressure is less than 1000 psig. If these valves were stroked during power operation and failed in the close position, the corresponding accumulator would be rendered inoperable and thus decrease plant safety. Also, the valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

These valves will be full stroke exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-19

System : Safety Injection

Valve(s): 2-SI-MOV-2890A
2-SI-MOV-2890B

Category: B

Class : 2

Function: Low Head Safety Injection Pump to Hot Leg Discharge Stop Valves

Cold Shutdown Justification

These stop valves have a double disk design and are closed during normal plant operation. They can be opened during the recirculation mode following an accident to periodically align the low head safety injection pump discharge with the reactor coolant system (RCS) hot legs. Therefore, they are called upon to open after the RCS is depressurized. During normal operation, downstream check valves in series separate the stop valves from the normal RCS pressure of 2235 psig.

According to AEOD Report T95-02, "Potential Damage to Low-Pressure Injection Valves During Surveillance Testing," valves with the same operating conditions, system configuration and disk design as the stop valves may be subject to loads that exceed the maximum design load of the valve if the valve is exercised at normal power. The maximum design load for the stop valves was determined for a depressurized RCS. However, if there is any leakage past the check valves during normal operation, the stop valves will experience the RCS pressure of 2235 psig on the downstream disk.

Full or partial-stroke exercising the stop valves at power and with RCS leakage to the downstream disk will produce a load that greatly exceeds the design load. Degradation from repeated surveillance testing could result in a situation where the valve may operate during testing, but could fail on a subsequent demand during an accident. To eliminate the concern of overloading the stop valves during surveillance testing, AEOD Report T95-02 recommends testing these valves "during refueling outages or other outages when the RCS pressure is low."

Testing Frequency

Because these stop valves fit the profile of valves subject to degradation as described above and in AEOD Report T95-02, the valves will be full stroke exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-20

System : Chemical and Volume Control

Valve(s): 2-CH-309

Category: C

Class : 2

Function: Normal Charging Isolation Check Valve

Cold Shutdown Justification

Closure test of 2-CH-309 cannot be performed during power operation because the test would interrupt the normal charging flow path.

Testing Frequency

This valve will be exercise to the close position every cold shutdown but not more frequently than once every three months. Normal operation of the charging system during power operation verifies that the valve opens.

COLD SHUTDOWN JUSTIFICATION CSV-21

System : Auxiliary Feedwater

Valve(s): 2-FW-27
2-FW-58
2-FW-89

Category: C

Class : 2

Function: Auxiliary Feedwater Header Check Valves at Main Feedwater Headers

Reactor Refueling Justification

Exercising these valves during power operation will introduce cold auxiliary feedwater to the steam generators resulting in thermal stress and possible steam generator tube degradation. Testing to the close position requires that the auxiliary feedwater path be isolated, the upstream piping vented, and leakage collected at a drain. It is impractical to perform both the open test and the close test during normal operation.

Testing Frequency

These valves will be exercised to the open and close positions every cold shutdown but not more frequently than once every three months.

4.7 VALVE TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

ISTC-3521 and ISTC-3522 allow for the full stroke exercising of valves during reactor refueling (but not more frequently than every three months) if the valves cannot be exercised during normal operation or cold shutdown. Therefore, no request for relief from testing every three months is necessary.

However, ISTC-9200 does require that the owner specifically identify these valves. The reactor refueling justifications identify and provide the technical basis for valves exercised during reactor refueling outages.

REACTOR REFUELING JUSTIFICATION RRV-1

System : Chemical and Volume Control

Valve(s): 2-CH-258
2-CH-267
2-CH-276

Category: C

Class : 2

Function: Charging Pump Discharge Check Valve

Reactor Refueling Justification

With present plant design, these valves can only be partial stroke exercised during power operation because the charging pumps cannot achieve design accident flow when pumping into the Reactor Coolant System at operating pressure. The only available flow path to test these valves is into the reactor coolant system. During cold shutdown, stroke exercising these valves could result in an overpressurization of the Reactor Coolant System and could force a safety system to function.

Testing Frequency

These valves will be tested to the close position every three months and to the full flow tested each refueling.

REACTOR REFUELING JUSTIFICATION RRV-2

System : Safety Injection

Valve(s): Valves affected by this request are identified in Table RRV-2.

Category: See Table RRV-2.

Class : See Table RRV-2.

Function: See Table RRV-2.

Reactor Refueling Justification

Valves 2-SI-46A, 46B, 50 and 327 cannot be full stroke exercised during plant power operation. The only full flow path is into the reactor coolant system and the low head safety injection pumps cannot overcome reactor coolant system operating pressure. During cold shutdown, the reactor coolant system pressure still prevents full flow testing of the check valve.

Testing valves 2-SI-50, 53, 327 and 61 to the close position requires isolating the suction lines to the low head safety injection pumps, venting on the upstream side of the valve being tested, starting the pump on the other path, checking for leakage and then repeating the process for the other valves. This test can take up to an hour to complete and places the unit into an LCO per Technical Specification 3.3 if performed during normal operation. Valves 2-SI-50 and 327 will be tested to the close position at the same test interval as the open test, which is every reactor refueling.

Due to the piping configuration, valves 2-SI-53 and 61 are normally back pressure tested with valves 2-SI-50 and 327. The valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a separate local back pressure leak test for these valves at a test interval that is different than the interval for valves 2-SI-50 and 327.

With the current piping configuration, valves 2-SI-46A and B cannot be back pressure tested with flow. They will be disassembled and examined on a sampling basis every reactor refueling.

Testing Frequency

Valves 2-SI-50, and 327 will be exercised to the full open and close positions every refueling. Valves 2-SI-53, and 61 will be exercised to the full open position every three months, and to the close position every refueling.

To verify the close position, valves 2-SI-46A and B will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c). The open position is verified during normal operation of the main feedwater system. These valves will be tested to the full open position every reactor refueling.

TABLE RRV-2

Valve	Category	Class	Function
2-SI-46A 2-SI-46B	C	2	Low Head Safety Injection Pump Suction from Refueling Water Storage Tank Check
2-SI-50 2-SI-327	C	2	Low Head Safety Injection Pump Discharge Check
2-SI-53 2-SI-61	C	2	Low Head Safety Injection Pump Recirculation Line Check

REACTOR REFUELING JUSTIFICATION RRV-3

System : Safety Injection

Valve(s): 2-SI-107 2-SI-109
2-SI-128 2-SI-130
2-SI-145 2-SI-147

Category: C

Class : 1

Function: Accumulator Discharge Check

Reactor Refueling Justification

These valves cannot be flow tested during normal operation because the accumulator pressure (600 to 650 psig) is below Reactor Coolant System pressure and the injection of borated water would upset the reactor coolant chemistry. During cold shutdown, the RCS pressure still prevents full flow testing.

To achieve full flow through the valves during reactor refueling, the accumulator would have to be discharged from an initial pressure of 600 psig. Discharging the accumulator from this pressure would stress the piping system and inject nitrogen into the RCS. Nitrogen in the RCS has been linked to gas binding of the RHR pumps. However, the accumulator can be discharged from a lower pressure during reactor refuelings when the RCS is depressurized. At this pressure, full flow conditions will not be established; however, enough flow will be developed to open the check valves to the full open position. This event can be verified and documented using non-intrusive diagnostic techniques.

Testing Frequency

With flow from each accumulator, these check valves will be acoustically monitored using a sampling plan for the disk opening to strike the back seat, and then closing to strike the valve seat every reactor refueling. The data will be analyzed to show that the disk struck the back seat and then the valve seat, which verifies that the disk stroked to the full open and close positions.

The sampling plan will follow the guidance described in NUREG-1482, Section 4.1.2. Valves 2-SI-109, 130 and 147 are closest to the reactor coolant system and are in one group and valves 2-SI-107, 128 and 145 are in the other group. During the initial testing using non-intrusive techniques, each valve in the group was verified as operable.

During subsequent testing, non-intrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. In this context, flow testing means that flow will be established in the lines but not measured. Indirect means can be used to verify that flow is established. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using non-intrusive techniques during the same outage. The test frequency is the same as described in ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-4

System : Safety Injection

Valve(s): Valves affected by this request are identified in Table RRV-4.

Category:

Class :

Function:

Reactor Refueling Justification

Open Test Discussion

The valves on the high head injection paths cannot be partial or full stroke exercised to the open position during power operation because flow through these valves would thermal shock the injection system and cause unnecessary plant transients. Flow cannot be established in the valves on the low head injection paths during power operation because the low head safety injection pumps do not develop sufficient head to overcome reactor coolant system pressure.

During cold shutdown, exercising the high head injection path valves with flow could cause a low temperature overpressurization of the reactor coolant system and force a safety system to function. Because of the large flow rate (3000 gpm) produced by the low head safety injection pumps, exercising the low head injection path valves during cold shutdowns when the reactor head is bolted in place presents the risk of filling the pressurizer and overflowing through a pressure operated relief valve into the pressurizer relief tank. Therefore, it is impractical to exercise the high or the low head injection path valves with flow quarterly or during cold shutdowns. The valves listed in Table RRV-4 are on the high and/or the low head injection paths.

Close Test Discussion for 2-SI-79, 82, 85, 241, 242 and 243

To individually verify closure for valves 2-SI-79, 82, 85, 241, 242 and 243, the piping must be vented upstream and a back pressure test performed. These valves are located inside the containment and would require a subatmospheric containment entry to perform the back pressure test if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

These valves are designated as pressure isolation valves. Technical Specification Table 4.1-2A requires that periodic leakage testing on each of these valves be accomplished prior to entering power operation condition after each time the plant is placed in the cold shutdown condition for refueling and after each time the plant is placed in cold shutdown condition for 72 hours if testing has not been accomplished in the proceeding 9 months.

According to ISTC-3522(d), " Valves exercised at shutdowns shall be exercised during each shutdown, except as specified in ISTC-3522(e). Such exercise is not required if the interval since the previous exercise is less than 3 months. During extended shutdowns, valves that are required to perform their intended function (See ISTA-1100) shall be exercised every 3 months, if practicable." ISTC-3522(e) states that "Valve exercising shall commence within 48 hr of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. For extended outages, testing need not be commenced in 48 hr if all valves required to be tested during cold shutdown will be tested before or as part of plant start up. However, it is not the intent of this Subsection to keep the plant in cold shutdown to complete cold shutdown testing."

However, if that first cold shutdown came more than nine months after the last test, Technical Specifications would require that the test be completed regardless of the delay to plant startup. In this respect, the Technical Specification frequency is more conservative than the IST Program required frequency. Also, a leakage test provides a better measure of the condition of the valve seats than does a standard back pressure test. When compared to the Code requirements for a back pressure test performed every cold shutdown, the combination of the Technical Specification required test frequency and leakage testing is an alternative that provides an acceptable level of quality and safety.

<u>Close Test Discussion for 2-SI-88, 91, 94, 238, 239 and 240</u>

To verify closure for these valves, a subatmospheric containment entry must be made and a backseat test performed if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

To backseat test valves for 2-SI-88, 91 and 94, the reactor coolant system is pressurized to approximately 300 psig, the piping upstream of the valves is drained and leakage at an upstream drain collected and measured. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.

To backseat test valves 2-SI-238, 239 and 240, the reactor coolant system is pressurized to approximately 300 psig to maintain the downstream check valves 2-SI-88, 91 and 94 closed, a high head safety injection pump is started to pressurize the piping upstream of valves 2-SI-88, 91 and 94, and downstream of valves 2-SI-238, 239 and 240, the piping upstream of valves 2-SI-238, 239 and 240 is drained and leakage at an upstream drain collected and measured. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.

To perform the backseat test for these valves takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on these valves is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

Close Test Discussion for 2-SI-235, 236 and 237

To verify closure for valves 2-SI-235, 236 and 237, a subatmospheric containment entry must be made and a back pressure test performed if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

To backseat test these valves, the reactor coolant system is pressurized to approximately 300 psig to maintain the downstream check valves 2-SI-79, 82 and 85 closed, a low head safety injection pump is started to pressurize the piping upstream of valves 2-SI-79, 82 and 85, and downstream of valves 2-SI-235, 236 and 237, the piping upstream of valves 2-SI-235, 236 and 237 is drained and leakage at an upstream drain collected and measured. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.

To perform the backseat test for the three valves takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown which is consistent with NUREG-1482, Section 4.1.4 as discussed above.

Close Test Discussion for 2-SI-224, 225, 226, 227, 228 and 229

Valves 2-SI-224, 225, 226, 227, 228 and 229 need only to open to perform their safety function. No credit is taken for valves 2-SI-224, 225, 226, 227, 228 and 229 to close because the upstream and downstream valves provide isolation for the safety injection flow paths. For each of these valves, there are normally closed motor operated valves located upstream and two check valves in series located downstream. However, ISTC-5211(a) requires that "The necessary valve obturator movement during exercise testing shall be demonstrated by per-forming both an open and a close test." This requirement applies to check valves with a safety function in either one or both directions.

Back pressure testing these valves requires that the downstream piping be pressurized while the RCS is at approximately 300 psig, the upstream piping drained and leakage at an upstream drain collected and measured. To perform the back pressure test for the six valves takes from two to five hours and requires that test personnel work in a radiation area. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown which is consistent with NUREG-1482, Section 4.1.4 as discussed above.

Testing Frequency

Testing Frequency to the Open Position

There is no installed instrumentation that can measure individual flow rates for valves 2-SI-79, 82, 85, 88, 91, 94, 238, 239, 240, 241, 242 and 243. Clamp on ultrasonic flow instrumentation will be used to verify full flow through the hot leg safety injection valves 2-SI-88, 91, 94, 238, 239 and 240 each reactor refueling.

With low head pump flow, the cold leg injection valves 2-SI-79, 82, 85, 241, 242 and 243 will be acoustically monitored using a sampling plan for the disk striking the back seat every reactor refueling. The data will be analyzed to show that the disk struck the back seat, which verifies that the disk stroked to the full open position.

The sampling plan will follow the recommended alternative testing method described in NUREG 1482, Section 4.1.2. The valves will be placed into two groups with valves 2-SI-79, 82 and 85 in one group, and valves 2-SI-241, 242 and 243 in the other group. During initial testing using nonintrusive techniques, each valve in the group will be nonintrusively verified as operable. During subsequent testing, nonintrusive verification will be performed for only one valve of the group on a rotating schedule each time the testing is performed, and the balance of the group will be flow tested. If problems are found with the sample valve that are determined to affect the operational readiness of the valve, all valves in the group must be tested using nonintrusive techniques during the same outage.

The remaining valves 2-SI-224, 225, 226, 227, 228, 229, 235, 236 and 237 will be full stroke exercised with flow every reactor refueling.

Testing Frequency to the Close Position

Valves 2-SI-79, 82, 85, 241, 242 and 243 will be tested to the close position per the requirements of Technical Specification Table 4.1-2A.

The valves 2-SI-88, 91, 94, 238, 239 and 240 will be tested for leakage to confirm that the valves provide isolation for the three hot leg injection paths. The leakage tests will be performed every reactor refueling. Valves 2-SI-235, 236 and 237 will be tested for leakage to confirm that the valves are in the closed position. The leakage tests will be performed every reactor refueling.

The remaining valves 2-SI-224, 225, 226, 227, 228 and 229 will be tested to the close position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-4 (Cont.)

TABLE RRV-4

Valve	Category	Class	Function
2-SI-88, 91 2-SI-94, 238 2-SI-239, 240	C	1	Safety Injection to RCS Hot Legs
2-SI-235 2-SI-236 2-SI-237	C	1	High Head Safety Injection to RCS Cold Legs
2-SI-241 2-SI-242 2-SI-243	AC	1	Low Head Safety Injection to RCS Cold Legs
2-SI-224, 225 2-SI-226, 227	C	2	High Head Safety Injection Check Valve at Containment Penetrations
2-SI-228, 229	C	2	Low Head Safety Injection Check Valves at Containment Penetrations
2-SI-79, 82, 85	AC	1	Safety Injection to RCS Cold Legs

REACTOR REFUELING JUSTIFICATION RRV-5

System : RWST Cross Tie

Valve(s): 2-SI-25
2-SI-400

Category: C

Class : 2

Function: Charging Pump Suction from RWST Cross Tie

Reactor Refueling Justification

Exercising these valves during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in reactor coolant boron inventory.

Full flow for the charging system can only be established during reactor refueling when the RCS is depressurized.

Valve 2-SI-25 must close to preserve inventory from the Unit 1 RWST when the cross tie lines are opened. This valve is also subject to leak testing, which is performed every reactor refueling. Verification of closure will be performed during the leak test every reactor refueling instead of every cold shutdown because the small increase in safety gained by testing during cold shutdown does not justify performing a leak rate test. Due to the piping configuration upstream of valve 2-SI-400, the best method for verifying the close position is by disassembly and examination.

Testing Frequency

These valves will be full flow tested during every reactor refueling. Valve 2-SI-25 will be exercised to the close position every refueling outage. Valve 2-SI-400 will be disassembled and examined every reactor refueling to verify the close position.

REACTOR REFUELING JUSTIFICATION RRV-6

System : Various

Valve(s): Table RRV-6 identifies valves affected by this justification.

Category:

Class :

Function:

Reactor Refueling Justification

These check valves must seat upon reversal of flow in order to fulfill their safety functions. The only way to verify closure is to perform a local leak rate/back pressure test. Since the valves are located inside containment, they cannot be tested quarterly.

These valves are containment isolation valves and are subject to leak testing every reactor refueling outage per the requirements of the Appendix J leak testing program and OM Part 10, Paragraphs 4.2.2.3(e) and (f). The leak tests not only verify that the valves close adequately as does a normal back pressure test, but the tests also reveal the condition of the valve seating surfaces. As required by Paragraph 4.2.2.3(e), the leak tests include acceptance criteria for the maximum allowed leakage.

Performing a back pressure test every cold shutdown does not provide enough increase in safety to justify the burden of back pressure testing on a more frequent basis.

Testing Frequency

These valves will be exercised to the close position every reactor refueling. Valve 2-IA-864 is verified to open by the normal operation of the containment instrument air system. Normal operation of the radiation monitoring system during power operation verifies that valve 2-RM-3 opens. Valve 2-RC-160 isolates the primary grade (PG) water supply to the pressurizer relief tank (PRT). Following each outage, the PRT is normally filled with water supplied from the PG makeup system. Filling the PRT verifies that valve 2-RC-160 opens. Valve 2-SI-304 is on the nitrogen supply line to the SI accumulators. Charging of the SI accumulators during each refueling outage is adequate verification of the open position for valve 2-SI-304. The remaining valves 2-IA-868 and 2-VP-12 will be exercised to the open position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-6 (Cont.)

TABLE REACTOR RRV-6

Valve	Category	Class	Function
2-IA-864 2-IA-868	AC	2	Instrument Air Containment Isolation
2-RC-160	AC	2	Primary Grade Water to Pressurizer Relief Tank
2-RM-3	AC	2	Isolation on Radiation Monitor Return Line
2-SI-304	AC	2	Nitrogen Accumulators N_2 Supply
2-VP-12	AC	2	Condenser Air Removal Discharge to Containment

REACTOR REFUELING JUSTIFICATION RRV-7

System : Component Cooling

Valve(s):	2-CC-94	2-CC-556
	2-CC-95	2-CC-557
	2-CC-555	2-CC-592

Category: C

Class : 3

Function: Component Cooling Supply to RCP Thermal Barrier Isolation

Reactor Refueling Justification

These check valves must seat upon reversal of flow in order to fulfill their safety function to prevent gross leakage. For the following reasons, it is not practical to test the thermal barrier check valves quarterly or at cold shutdown:

1) the valves are inside a locked radiation area located inside containment; therefore, they are not accessible during normal operation,

2) the valves are inaccessible for about 24 hours after cold shutdown due to decontamination activities that must be performed before entry into the area,

3) the reactor cooling pump(s) may be running with the reactor cooling system temperature less than 200°F if an RHR loop is unavailable (in this case the valves and thus cooling to the thermal barriers would normally not be isolated) and

4) the valves have soft seats that are replaced every five years and using pressure to back pressure these valves on the more frequent cold shutdown frequency may accelerate the degradation of the soft seats.

These valves will be exercised only during refueling outages because the small increase in safety gained by performing this test every cold shutdown does not justify the burden of performing a local back pressure test.

Testing Frequency

Exercise to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pump thermal barriers.

REACTOR REFUELING JUSTIFICATION RRV-8

System : Chemical and Volume Control

Valve(s): 2-CH-230

Category: C

Class : 2

Function: Charging Pump Supply from VCT Discharge

Reactor Refueling Justification

This valve is on the discharge line of the volume control tank (VCT) that leads to the charging pump suction lines. Based on the piping configuration, the close position cannot be verified by normal system flow, but must be verified by performing a back pressure leak test. To perform the back pressure test, the VCT along with normal letdown, and the reactor coolant pump (RCP) seal water return line must be isolated. These systems cannot be isolated during normal plant operation.

Back pressure testing these valves requires that the VCT and the RCP seal water return line be isolated, the upstream piping vented, the downstream piping be pressurized, and the leakage past 2-CH-230 collected and measured. This back pressure test is performed in concert with the leak testing of the piping boundaries leading from the LHSI pumps to the charging pumps. It is estimated that it will take one crew an entire shift to perform the back pressure test for these boundaries. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4.

NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on this valve is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

Testing Frequency

This valve will be exercised to the full open position every three months and to the close position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-9

System : Component Cooling

Valve(s): 2-CC-176
2-CC-177

Category: C

Class : 3

Function: Component Cooling Water to RHR Heat Exchanger Check Valves

Reactor Refueling Justification

Check valves 2-CC-176 and 177 are located inside containment on two parallel headers. These valves must open to provide component cooling water to the "A" and "B" RHR heat exchangers and close to isolate the penetrations. A containment entry and manipulation of other system valves are necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation.

To perform a closure test during cold shutdown, one loop of the residual heat removal (RHR) system must be removed from service. Under normal cold shutdown conditions where the reactor coolant pumps are not running, one RHR loop may be inoperable for only two hours according to Technical Specification 3.1.A.1.d.1(a). Two hours is not enough time to perform the local back flow test. Also, the local back flow test requires that test equipment be installed just upstream and downstream of the valve, the piping upstream and downstream be isolated, and the cross connect path between the two CC trains opened. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

During normal operation, component cooling water is supplied to the containment penetration coolers through the "B" header, which feeds the "B" RHR heat exchanger. Adequate cooling of these penetrations demonstrates that valve 2-CC-176 moves to the partially open position. Header "B" is isolated downstream of the RHR heat exchanger by a manual valve located inside containment. A containment entry is necessary to open the isolation valve and to full flow valve 2-CC-176, which is impractical during normal operation.

The "A" RHR heat exchanger is not isolated during normal operation and flow can be established through valve 2-CC-177. The current full flow test procedure calls for the manipulation of a manual valve located inside containment, which is impractical during normal operation.

To achieve full flow through check valves 2-CC-176 and 177 during cold shutdowns, the CC flow normally has to be adjusted which may cause the reactor coolant system (RCS) temperature to decrease. This decrease in RCS temperature could challenge the RCS cool down limits described in Technical Specification Section 3.1.B. The full open tests will be performed during every reactor refueling instead of every cold shutdown because the small increase in safety gained by performing the testing during cold shutdowns does not justify exposing the plant to the risk of exceeding the RCS cool down limits.

Testing Frequency

Check valves 2-CC-176 and 177 will be exercised to the close and full open positions every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-10

System : Component Cooling

Valve(s): 2-CC-1
2-CC-58
2-CC-59

Category: C

Class : 3

Function: Component Cooling Water to Reactor Coolant Pump Coolers Check Valves

Reactor Refueling Justification

These check valves open to provide component cooling water to the reactor coolant pump coolers (a non-safety related function) and close to isolate the containment penetrations. A containment entry is necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation. Also, the local back flow test requires that the reactor coolant pump serviced by the component cooling water supply line be secured for at least 20 minutes, test equipment be installed just upstream and downstream of the valve and the piping upstream and downstream be isolated. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

Testing Frequency

These check valves will be exercised to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor coolant pumps.

REACTOR REFUELING JUSTIFICATION RRV-11

System : Component Cooling

Valve(s): 2-CC-224
2-CC-233
2-CC-242

Category: C

Class : 3

Function: Component Cooling Water to Reactor Containment Air Recirculation Coolers Check Valves

Reactor Refueling Justification

These check valves open to provide component cooling water to the reactor containment air recirculation coolers (a non-safety related function) and close to isolate the containment penetrations. A containment entry is necessary to test these valves to the close position by means of a local back flow test. This containment entry is considered impractical during power operation. Also, the local back flow test requires that test equipment be installed just upstream and downstream of the valve and the piping upstream and downstream be isolated. The differential pressure across the check valves is measured and compared to an acceptance criterion. Test preparation includes the staging of a 500 gallon bladder to collect chromated component cooling water to ensure that an excessive amount of this water does not drain to the containment sumps. According to NUREG-1482, Section 4.1.4, "The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage."

Testing Frequency

These check valves will be exercised to the close position every reactor refueling. The open position is verified during normal operation as component cooling water is supplied to the reactor containment air recirculation coolers.

REACTOR REFUELING JUSTIFICATION RRV-12

System : Auxiliary Feedwater

Valve(s): 2-FW-142 2-FW-272
2-FW-157 2-FW-273
2-FW-172 2-FW-305
2-FW-306

Category: C

Class : 3

Function: Auxiliary Feedwater Pump Discharge Check Valves and Cross Connect Check Valves

Reactor Refueling Justification

The check valves on the Unit 1 to Unit 2 auxiliary feedwater cross-connect line (Valves 2-FW-272, 273, 305 and 306) must open to allow Unit 1 auxiliary feedwater flow to Unit 2 in the event of a high energy line break in the Unit 2 main steam line valve house which could disable the three Unit 2 auxiliary feedwater pumps. To exercise these check valves to the full open position, auxiliary feedwater flow must be established to the steam generators. Doing so while both units are operating would introduce cold water from the emergency condensate storage tank into the hot steam generators resulting in thermal stress and possible steam generator tube degradation. Therefore, these valves cannot be exercised every three months.

To avoid thermal stressing the Unit 2 steam generators, Unit 2 must be shutdown and the Unit 1 auxiliary feedwater pumps used to inject the cold Unit 1 emergency condensate water into the relatively cool Unit 2 steam generators. To divert the Unit 1 auxiliary water flow to the cross-connect line, all of the Unit 1 motor operated isolation valves (1-FW-MOV-151A, B, C, D, E and F) must be closed. A probabilistic safety analysis (PSA) performed for this Unit 1 configuration showed that the closure of all of the Unit 1 auxiliary feedwater motor operated isolation valves significantly increased the risk of core damage to Unit 1. According the NUREG-1482, Section 3.1.1, "it would be appropriate to weigh the safety impact against the benefits of testing as a basis for deferring testing from quarterly to cold shutdowns or reactor refuelings." To reduce the exposure to risk for the operating unit, the full flow exercise testing of check valves 2-FW-272, 273, 305 and 306 will be limited to reactor refuelings.

To test valves 2-FW-272, 273, 305 and 306 to the close position requires that the upstream piping be vented and the downstream piping pressurized. The close test will be performed on the same test interval as the open test, which is every reactor refueling.

The auxiliary feedwater pump discharge check valves (2-FW-142, 157 and 172) must open to allow flow to the steam generators and close to preserve auxiliary water inventory. The valves can be full flow tested every three months using the full flow test loop. The closure test involves using flow from a running auxiliary feedwater pump to close and seat the discharge check valves of the other two non-running pumps. However, to pressurize the discharge lines of the non-running pumps, a flow path must be established to the steam generators. Again, doing so while both units are operating would introduce cold water from the emergency condensate storage tank into the hot steam generators resulting in thermal stress and possible steam generator tube degradation. Therefore, these valves cannot be closure tested every three months.

Back pressure testing the discharge check valves during a shutdown eliminates the problem of thermal stressing the steam generators. However, during shutdown the steam driven auxiliary feedwater pump is inoperable and during the back pressure test, only one auxiliary feedwater pump is available to service the operating unit. According to Technical Specification 3.6.B.1.b, the following shall be operable, "Two of the three auxiliary feedwater pumps on the opposite unit (automatic initiation instrumentation need not be operable), capable of being used with the opening of the cross-connect." A PSA performed for this Unit 2 configuration showed that by having only one auxiliary feedwater pump available, the risk of core damage to the operating unit is increased. Although this configuration is not as risk significant when compared to having all of the Unit 1 motor operated isolation valves closed, it still has a safety impact on the operating unit and should be avoided. To reduce the exposure to risk for the operating unit, these valves will be closure tested every reactor refueling.

<u>Testing Frequency</u>

The cross-connect check valves 2-FW-272, 273, 305 and 306 will be exercised to the full open and close positions every reactor refueling. The auxiliary feedwater pump discharge check valves 2-FW-142, 157 and 172 will be exercised to the full open position every three months and to the close position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-13

System : Feedwater

Valve(s): 2-FW-10
2-FW-41
2-FW-72

Category: C

Class : 2

Function: Main Feedwater check valves at Containment Penetrations.

Reactor Refueling Justification

Closure of these valves during power operation would require securing feedwater, which would result in reactor trip. Cold shutdown testing of valves using flow to verify closure is inconclusive due to the inability to establish adequate differential pressure across the valve disc.

A test was conducted in an effort to verify whether closure of these valves can be determined using flow. Because there is no isolation boundary between the steam generators and the valves, the test volume must include the steam generators. A steam generator was pressurized with a nitrogen blanket to approximately 5 psig. The 0.75 inch drain valve just upstream of the check valve was opened and flow was observed. The 14 inch check valve did not stop the back flow through the vent. It was concluded that the flow was inadequate to seat the check valve completely. Just a small gap between the disc and the seat was sufficient to create a flow area equal to or greater than the flow area through the drain. Therefore, the pressure differential associated with the back flow is being created across the drain valve and not the disc of the check valve.

The above test proved to be inconclusive because of the inability to establish a sufficient differential pressure across the disc. The only way to increase the differential pressure is to increase the flow area from the test volume. However, this is not achievable for the existing configuration. Immediately upstream of the drain valve is another 14 inch check valve, so the only available flow area from the test volume is the drain valve.

Testing Frequency

To verify the close position, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c). The open position is verified during normal operation of the main feedwater system.

REACTOR REFUELING JUSTIFICATION RRV-14

System : Safety Injection

Valve(s): 2-SI-47
2-SI-56

Category: C

Class : 2

Function: Low Head Safety Injection Pump Suction from Containment Sump Check Valve

Reactor Refueling Justification

To partial or full flow test these valves requires taking suction from the reactor containment sump which contains untreated water. This water should not be introduced into the system.

Testing Frequency

To verify the open and close positions, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-15

System : FW

Valve(s) : 2-FW-144 2-FW-159 2-FW-174
2-FW-148 2-FW-163 2-FW-178

Category : C

Class : 3

Function : Auxiliary Feedwater Pump Recirc Line and Pump Oil Cooler Check Valves

Reactor Refueling Justification

These check valves cannot be flow tested because instrumentation is not installed to measure flow or differential pressure. There is no other indirect means to verify full flow for these valves with the current configuration.

Testing Frequency

To verify the open and close positions, valves 2-FW-144, 159, and 174 will be grouped together; valves 2-FW-148, 163, and 178 will be grouped together, and one valve from each group will be disassembled and examined every reactor refueling. A different valve from each group will be disassembled for each examination. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-16

System : MS

Valve(s) : 2-MS-176
2-MS-178
2-MS-182

Category : C

Class : 2

Function : Main Steam Header Supply Check Valves To Turbine Driven Auxiliary Feedwater Pump

Reactor Refueling Justification

These check valves cannot be back pressure tested with flow during normal operation because this test would require the venting of process steam while verifying the close position. Venting of process steam would endanger the test personnel.

Testing Frequency

To verify the close position, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled for each examination. This test frequency is in accordance with ISTC-5221(c). The valves will be full flow tested every three months.

REACTOR REFUELING JUSTIFICATION RRV-17

System : Containment Spray

Valve(s): 2-CS-104 2-CS-13 2-RS-11
2-CS-105 2-CS-24 2-RS-17

Category: AC (2-CS-13, 24 and 2-RS-11,17) and C (2-CS-104,105)

Class : 2

Function: Containment Spray Pump Discharge Check Valves

Reactor Refueling Justification

These check valves cannot be exercised with flow during normal operation because this test would introduce containment spray to containment. These valves cannot be locally exercised during normal operation because they are located inside containment.

These valves are located upstream of the spray nozzles. For valves 2-CS-13 and 24, and 2-RS-11 and 17, the only way to perform a close test is to install a blank flange downstream and locally perform a close test using air. The small increase in safety gained by performing this test every cold shutdown does not justify the burden of installing the blank flange and locally back pressure testing the valves at the increased cold shutdown test frequency.

There are no blank flanges installed downstream for valves 2-CS-104 and 105. Therefore, a back pressure test cannot be performed on these valves with the current piping configuration. These valves have no external lever arms. The only means to exercise valves 2-CS-104 and 105 to the open and close positions is by disassembly.

Valves 2-CS-13 and 24, and 2-RS-11 and 17 do have weight-loaded lever arms, however, the weight position and lever arm angle are subject to adjustment to ensure that the valves open when a pressure differential using air is applied every 18 months as required by T. S. 4.5.C. Therefore, torque measurements would not be repeatable.

Testing Frequency

For testing to the open and close positions, valves 2-CS-104 and 105 will be grouped together and one valve from the group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

For testing to the open and close positions, valves 2-CS-13 and 24 will be grouped together; and valves 2-RS-11 and 17 will be grouped together and one valve from each group will be disassembled and examined every reactor refueling. A different valve from each group will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-18

System : Residual Heat Removal

Valve(s): 2-RH-MOV-2700
2-RH-MOV-2701
2-RH-MOV-2720A
2-RH-MOV-2720B

Category: B

Class : 1

Function: RHR Supply and Return Isolation Valves

Reactor Refueling Justification

These valves are interlocked with Reactor Coolant System pressure such that the valves cannot be opened at elevated reactor coolant system pressure. Over-pressurization of the suction line may cause a LOCA. The interlocks cannot be bypassed with normal control circuits. Therefore, the valves cannot be full or part-stroke exercised during power operation. Also, the valve controllers do not allow for a part-stroke exercise test.

The RHR suction valves 2-RH-MOV-2700 and 2701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Section 3.1.1, loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled.

The RHR return isolation valves 2-RH-MOV-2720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals.

Testing Frequency

These valves will be full stroke exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-19

System : Auxiliary Feedwater

Valve(s): 2-FW-131
2-FW-133
2-FW-136
2-FW-138

Category: C

Class : 2

Function: Auxiliary Feedwater Header Check Valves at Main Feedwater Headers and Containment Penetrations

Reactor Refueling Justification

Exercising these valves during power operation will introduce cold auxiliary feedwater to the steam generators resulting in thermal stress and possible steam generator tube degradation.

Back pressure testing these valves requires that the auxiliary feedwater headers be isolated, the upstream piping vented and the downstream piping be pressurized. It is estimated that it will take one crew an entire shift to perform the back pressure test for these valves. Therefore, verification of closure will be performed during the leak test every reactor refueling instead of cold shutdown, which is consistent with NUREG-1482, Section 4.1.4. NUREG-1482, Section 4.1.4 states in part that, "If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the staff has determined that implementation of an extension of the test frequency for such valves is acceptable in accord with 10 CFR 50.55a(f)(4)(iv)." Section 4.1.4 goes on to state that, "In the justification for the Code cold shutdown outage or refueling outage frequency, the basis for the impracticality of performing testing during power operation and, if applicable, during cold shutdown outages, must be described. The NRC has determined that the need to set up test equipment is adequate justification to defer back flow testing of a check valve until a refueling outage." Although the leak testing performed on these valves is not in accordance with Appendix J, the setup and performance limitations render leak testing impractical during power operation and cold shutdown outages.

<u>Testing Frequency</u>

These valves will be exercised to the open and close positions every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-20

System : Chemical and Volume Control

Valve(s): 2-CH-225
2-CH-227
2-CH-229

Category: C

Class : 2

Function: Emergency and Manual Emergency Boration Line Isolation Valves

Reactor Refueling Justification

To achieve full flow through check valves 2-CH-225, 227 and 229, the boric acid transfer pumps must be set at high speed, which could inject enough boric acid into the reactor coolant system to cause a reactor power transient if the concentration of boric acid in the reactor coolant system is low. Low concentrations of boric acid occur near the end of the fuel cycle. If the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.

Testing Frequency

Check valves 2-CH-225, 227 and 229 will be full stroked exercised every quarter during normal operation when the reactor coolant boric acid concentration is above 100 ppm. If the reactor coolant boric acid concentration drops below 100 ppm, testing to the open position will be deferred until the next refueling outage.

REACTOR REFUELING JUSTIFICATION RRV-21

System : Component Cooling

Valve(s): 2-CC-806

Category: C

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Makeup Valve

Reactor Refueling Justification

This valve must open to provide a flow path from the component cooling water system to the charging pump seal water surge tank as a supply of makeup water to the surge tank. There is no flow instrumentation to verify partial or full flow for the check valve.

There is level instrumentation on the surge tank. The surge tank can be isolated, drained down and refilled. However, the surge tank provides the NPSH for the charging pump cooling water pumps and it should not be isolated from the system during normal operation when component cooling water for the charging pumps is required.

Testing Frequency

This valve will be tested to the full open position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-22

System : Service Water

Valve(s): 2-SW-247 2-SW-251
2-SW-249 2-SW-253

Category: C

Class : 3

Function: Recirculation Spray Heat Exchanger Service Water Supply Vent Valves

Reactor Refueling Justification

These check valves must open to provide an effective vent path to ensure that the service water headers are filled and flow through the recirculation spray heat exchangers is quickly established.

There is no instrumentation to measure flow or differential pressure across the valves. The valves are inaccessible and cannot be manually manipulated without disassembly. The valves can be partial stroked open only when service water is sent through the recirculation spray heat exchangers. The recirculation spray heat exchangers are maintained dry to avoid fouling. With the current piping configuration, there is no means to partial stroke test these valves without fouling the heat exchangers.

Testing Frequency

For testing to the open and close positions, these valves will be grouped together and one valve from this group will be disassembled and examined every reactor refueling. A different valve will be disassembled for each examination. If a valve fails its examination, the remaining valves in the group will be disassembled and examined.

REACTOR REFUELING JUSTIFICATION RRV-23

System : Service Water

Valve(s):		
	2-SW-MOV-203A	2-SW-MOV-204C
	2-SW-MOV-203B	2-SW-MOV-204D
	2-SW-MOV-203C	2-SW-MOV-205A
	2-SW-MOV-203D	2-SW-MOV-205B
	2-SW-MOV-204A	2-SW-MOV-205C
	2-SW-MOV-204B	2-SW-MOV-205D

Category: B

Class : 3

Function: Recirculation Spray Heat Exchanger Isolation Valves

Reactor Refueling Justification

The recirculation spray heat exchangers are designed to transfer heat from the containment recirculation spray system to the service water system. Four heat exchangers (2-RS-E-1A, B, C and D) are installed in the Unit 2 containment. Each heat exchanger has a service water supply line with a 24" motor operated isolation valve (2-SW-MOV-204A, B, C and D), and a service water return line with a 24" motor operated isolation valve (2-SW-MOV-205A, B, C and D). The supply lines are fed by two service water headers, each having two 30" motor operated isolation valves in parallel (2-SW-MOV-203A and B, and 2-SW-MOV-203C and D). One header feeds heat exchangers 2-RS-E-1A and 1D, and the other header feeds heat exchangers 2-RS-E-1B and 1C. All of the isolation valves are butterfly valves and are normally closed. Upon initiation of containment recirculation spray these, valves automatically open.

The service water supply and return line isolation valves provide the second containment isolation boundary for the recirculation spray heat exchangers. Each heat exchanger loop is considered a closed system within the containment. Therefore, although the isolation valves are designated as containment isolation valves in UFSAR Table 5.2-1, they are not subject to Appendix J leak testing. However, each heat exchanger train is subject to leak testing whenever the system membrane is breached, which normally occurs during maintenance on the system during refueling outages.

These large butterfly valves have rubber seats to ensure a leak tight seating surface. An investigation of valve leakage events related to this type of valve revealed that a leakage cause was degraded seats. Foreign material was found in the seats that could cause cutting of the soft seat surface when the valves are exercised. This foreign material is transported to the valve by the normal operation of the circulating water system and the service water system. Frequent exercising of the valves presents more opportunities for this type of seat damage to occur. To reduce damage to the valve seats, the exercise test will be deferred from every three months to every reactor refueling.

The 30" header isolation butterfly valves also have a boundary leakage function. The source of service water for Surry Power Station is the James River. The water in the James River is brackish, and is rich in sediments and marine organisms. This raw water must not leak by the header and supply line isolation valves because the sediment and marine growth would foul the heat exchangers. The 30" header isolation butterfly valves prevent the river water from filling the service water header and supply lines up to valves 2-SW-MOV-204A, B, C and D. The service water headers up to the 24" supply line branches are filled with chemically treated water and maintained in a wet lay up condition during normal operation to reduce biological fouling, to reduce the initial flow through the heat exchangers and thus reduce the amount of marine growth torn off the pipe walls, and to reduce air entrapment in the heat exchangers.

There have been times when the 30" valves have leaked to the point that the headers had to be drained to prevent service water from reaching the 104 valves. The 30" valves have rubber seats to ensure a leak tight seating surface. As with the 24" butterfly valves, exercising the 30" valves presents more opportunities for seat damage to occur. To reduce damage to the valve seats, the exercise test will be deferred from every three months to every reactor refueling.

A review of stroke time data collected over a10 year period revealed that there were no stroke time test failures for any of the twelve valves. Therefore, these valves have proven to be highly reliable, and based on good performance the test interval of every reactor refueling will be adequate to maintain this reliability.

<u>Testing Frequency</u>

These valves will be exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-24

System : Main Steam System

Valve(s): 2-MS-RV-201A
2-MS-RV-201B
2-MS-RV-201C

Category: B

Class : 2

Function: Main Steam Header Discharge to Atmosphere Pressure Control Valves

Reactor Refueling Justification

These valves are located above the main steam lines on the top floor of the main steam valve house. The top floor of the main steam valve house is exposed to heat loads from the main steam lines and is a high temperature environment, particularly in the summer time.

If the plant is at power, upstream isolation valves must be closed manually. Then the valves must be stroked and observed locally when performing the fail-safe test. Given the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel. To reduce the number of times that the test personnel are exposed to this hazard, the valves will be tested every refueling outage. It is important that the valves be tested when the valve body is at operating temperature to ensure that the actuator assembly functions properly. The main steam system operates at a nominal temperature of 555°F. Therefore, the exercise test will be performed either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

The issue of testing as the plant exits the refueling outage is addressed in NUREG-1482, Section 3.1.1.2. This section states in part that,

> "OM-10 requires that valves tested on a reactor refueling outage frequency be tested prior to returning the plant to operation. Several licensees have indicated that certain valves cannot be tested until power ascension begins. This section was included to give guidance for such valves and to indicate that the operability of technical specifications would control the time for testing such valves. It is intended that such valves will be indicated in the IST program as tested on a refueling outage

frequency, even though the plant may return to 'operation' before testing is completed."

Testing these valves as the plant exits the refueling outage complies with the guidance given in NUREG-1482, Section 3.1.1.2.

Testing Frequency

These valves will be exercised closed every reactor refueling either on the way to plant shutdown, or after steam flow has been established in the main steam system and the valve body has reached operating temperature as the plant exits the outage.

REACTOR REFUELING JUSTIFICATION RRV-25

System : Service Water

Valve(s): 2-SW-442
2-SW-445

Category: C

Class : 3

Function: Service Water Pump to Charging Pump Discharge Check Valves

Reactor Refueling Justification

These check valves can be seated by pressure from the running pump in parallel with the non-running pump. However, there are check valves located upstream of 2-SW-442 and 445, and there are no vents or drains located between the check valves in series to collect leakage or to connect a pressure gauge. Therefore, with the current piping configuration, the check valves cannot be verified to close with flow. They will be disassembled and examined.

Testing Frequency

For testing to the close positions, valves 2-SW-442 and 445 will be grouped together; and one valve from the group will be disassembled and examined every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with ISTC-5221(c).

REACTOR REFUELING JUSTIFICATION RRV-26

System : Residual Heat Removal

Valve(s): 2-RH-047

Category: C

Class : 2

Function: RHR Pump Discharge Check Valve

Reactor Refueling Justification

This check valve is located downstream of the RHR heat exchanges on one of two parallel lines that come off a common header and discharge to the RCS cold legs. Just upstream is the motor operated isolation valve 2-RH-MOV-2720A. There are no vents or drains between the check valve and 2-RH-MOV-2720A. With the current piping configuration the upstream piping cannot be vented and leakage collected during a back pressure test on the check valve. Therefore, the valve will be disassembled and examined.

Testing Frequency

For testing to the close position, valve 2-RH-047 will be disassembled and examined every reactor refueling.

4.8 ALTERNATIVE TESTING FOR NON-CODE VALVES

According to the minutes of public meeting on Generic Letter 89-04, "Paragraph (g) of 10CFR 50.55a requires the use of Section XI of the ASME Code for inservice testing of components covered by the Code. For other components important to safety, the licensee also has the burden of demonstrating their continued operability." The minutes go on to state that, "The Code-required IST program is a reasonable vehicle to provide a periodic demonstration of the operability of pumps and valves not covered by the Code. If non-Code components are included in the ASME Code IST program (or some other licensee-developed inservice testing program) and certain Code provisions cannot be met, the Commission regulations (10 CFR 50.55a) do not require a 'request for relief' to be submitted to the staff. Nevertheless, documentation that provides assurance of the continued operability of the non-Code components through the performed tests should be available at the plant site." Non-Code components are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

Surry Power Station has elected to include certain non-Code components in the ASME IST program. Where the Code provisions are not met for non-Code components, alternative testing is performed that is adequate to ensure continued operability. The alternate testing is described in this section. There may be other deviations from Code provisions that are not described in this section. For these cases, documentation is available at the plant site.

As indicated in the minutes of public meeting on Generic Letter 89-04, a 'request for relief' need not be submitted for non-Code components. Therefore, the alternative tests described in this section are not 'requests for relief' but are provided for information.

NON-CODE ALTERNATIVE TESTING VNC-1

System : Instrument Air

Valve(s):	2-IA-381	2-IA-396
	2-IA-384	2-IA-947
	2-IA-395	2-IA-948

Category: C

Class : NC

Function: Bottled Air System Supply/Isolation

ISTC Code Requirements Which Will Not Be Met

Exercise valves every three months.

Basis for Alternate Testing

Valves 2-IA-395, 396 and 947 must close to ensure that bottled air is available to actuate the main valves (2-RC-PCV-2455C, 2-RC-PCV-2456, and 2-MS-SOV-202A and B). Valves 2-IA-381, 384 and 948 must open to allow bottled air to reach the main valves. There is no direct means to measure the flow of air through the check valves.

However, after the instrument air system is isolated and the lines vented, the stroke times of the main valves are measured and compared to acceptance criteria. Measuring the stroke times provides indirect evidence that valves 2-IA-381, 384 and 948 open properly and that valves 2-IA-395, 396 and 947 close properly.

The performance of this test renders the main valves inoperable; therefore, the tests cannot be performed during normal operation. After stroking the main valves with the air bottles, the air bottles must be replaced. The safety gained in testing the valves every cold shutdown versus every reactor refueling does not justify the burden of replacing the air bottles on the more frequent basis.

Alternate Testing

Valves 2-IA-395, 396 and 947 will be tested closed and valves 2-IA-381, 384 and 948 will be tested open by isolating and venting the instrument air lines, and then stroking the main valves with the bottled air. The stroke times of the main valves will be measured and compared to acceptance criteria. This test will be performed every reactor refueling.

Valves 2-IA-395, 396 and 947 will be tested open and valves 2-IA-381, 384 and 948 will be tested close by stroking the main valves with normal instrument air. Exercising the main valves with normal instrument air adequately demonstrates that the valves stroke to their non-safety positions. No stroke timing of the main valves is necessary. This test will be performed every reactor refueling.

NON-CODE ALTERNATIVE TESTING VNC-2

System : Emergency Generator

Valve(s): 2-EG-43
2-EG-44
2-EG-45
2-EG-46
2-EG-SOV-200A
2-EG-SOV-200B

Category: B (2-EG-43, 44, 2-EG-SOV-200A and B)
C (2-EG-45, 46)

Class : NC

Function: 2-EG-43, 44 EDG Starting Air/Drive Air Control/Relay Valves
2-EG-45, 46 EDG Air Start Pressure Equalizing Check Valves
2-EG-SOV-200A and B Air Start System Solenoid Valves

ISTC Code Requirements Which Will Not Be Met

For valves 2-EG-43,44, and 12-EG-SOV-200A, B, measure stroke time.

For valves 2-EG-45,46, measure flow to verify full open

Basis for Alternate Testing

Valves 2-EG-43 and 44 are air pilot valves that open to supply drive air to the EDG air starting motors. These valves along with the air start solenoid valves 2-EG-SOV-200A and B have actuation times considerably under a second and there is no visual reference on the valve to observe the stroke; therefore, the stroke time cannot be measured.

Valves 2-EG-45 and 46 are check valves that close to prevent opening the air start valves before the air motor pinion gears are fully engaged. They open to ensure that the air motor pinions remain engaged (hold-in feature) when the air motors are operating. The only indication of the proper operation of the check valves is the proper operation of the pinion gears. The air pilot valves and the check valves work in concert with the air start solenoid valves to start the emergency diesels upon demand within the required time.

Alternate Testing

These valves will be stroke tested quarterly by observing that the valves perform their intended function, which is to start the diesel engines. Adequate performance of the valves will be verified by recording the time it takes for the diesel engines to reach a predetermined RPM and comparing the time to an acceptance criterion.

Also, the failure of these valves to perform will promptly give a diesel engine trouble alarm. Further investigation would identify problems with the operability of these valves.

NON-CODE ALTERNATIVE TESTING VNC-3

System : EE

Valve(s): 1-EE-SOV-102
1-EE-SOV-103

Category: B

Class : NC

Function: Diesel Fuel Oil Pump Discharge Valves

ISTC Code Requirements Which Will Not Be Met

Measure stroke time.

Basis for Alternate Testing

These valves are small (1"), fast acting solenoid operated gate valves with no position indication lights and no local visual means of determining stroke time. Valve operability can only be indirectly observed by verifying system operability.

Also, these valves are interlocked with the pumps to open and close upon pump startup and shutdown.

Alternate Testing

These solenoid valves will be stroke tested quarterly by observing that the solenoid valves perform their intended function (fuel oil is flowing to the day tank after the solenoid valve has been opened).

NON-CODE ALTERNATIVE TESTING VNC-4

System : Main Steam

Valve(s): 2-MS-NRV-201A
2-MS-NRV-201B
2-MS-NRV-201C

Category: C

Class : NC

Function: Main Steam Non-Return Valves

ISTC Code Requirements Which Will Not Be Met

ISTC-5221(a)(3) says that observations to verify check valve function can be by other positive means such as nonintrusive testing results. This test method is applied to each valve within the test intervals described in ISTC-3522.

Reactor Refueling Justification

Valve Description

The main steam non-return valves (NRVs) at Surry Power Station are located in the main steam valve house and are a globe type stop check design. The valves measure approximately 16 feet from the bottom of the valve body to the top of the hand wheel and weigh almost 18,000 lbs. The disk is welded to a hollow piston and the whole assembly is free to move about 25 vertical inches within the valve body cylinder. The disk measures 25.5 inches across and the disk and piston assembly weighs approximately 1,200 lbs. When the main steam system is not in service, a motor operator is used to run the valve stem down onto the disk to secure the main steam line.

The valves open to allow steam to the turbine. For accident conditions, the non-return valves in conjunction with the main steam trip valves prevent the blowdown of more than one steam generator for any break location, even if one valve fails to close. For example, for a break upstream of the trip valve in one line, the closure of either the non-return valve in that line or the trip valves in the other lines prevents the blowdown of the other steam generators.

Method of Testing

The piping downstream of each non-return valve leads to a common distribution manifold and cannot be isolated. Therefore, performing a back pressure test using flow is not practical. Also, valve disassembly and examination are not practical alternatives due to the size of the valve and the weight of the disk.

However, an alternative exists to verify that the disk moved to the valve seat during reactor coolant system (RCS) cool down. When the RCS temperature is between 350°F and 195°F during the cool down process, the main steam trip valves are closed. Then the main steam non-return valves close in response to the loss of steam flow.

After the main steam trip valve is closed, diagnostic test equipment can be used to determine the position of the disk of the NRV. After the main steam flow is stopped, the non-return valve stem is run down onto the disk after the disk returns to the seat. A change in the running force within the normal travel of the stem indicates a resistance to stem movement (i.e., a stuck disk). Verifying that the stem travels to the seated disk with nominal changes in the running force indicates that the disk is on the seat. The test requires that the cool down process be delayed between one to two hours to setup the instrumentation and to perform the test on each of three valves.

The diagnostic test equipment provides two methods for detecting changes in the running force. The test can be performed either at the valve by monitoring the yoke strain using a permanently mounted force sensor or at the motor control center (MCC) by monitoring motor current. The first method converts yoke strain directly to stem load. A signature is generated that will show any changes in the stem load which would indicate a stuck or binding valve disk. The second and more sensitive method monitors a single phase of the motor current. The motor current information is used to generate motor power and power factor signatures that are very sensitive to changes in stem load. Changes in motor load would again indicate a stuck or binding valve disk. In both methods, the valve switch probes are monitored to determine the status of the torque and limit switches, and the open and close bypass switches in the motor operator control circuit over the course of stem travel. The second method is preferred.

Testing Frequency Discussion

Full stroke or part stroke exercising of these valves during power operation would result in a turbine and reactor trip. Since September, 1993, diagnostic test equipment has been used to verify that the disk traveled to the full close position during the plant cool down period going into planned cold shutdowns. No binding of the disk has been detected during these tests. The test results are expected because the piston-disk assembly is not attached to any other internal part, the 1,200 lb piston-disk assembly is maintained parallel within the valve body cylinder and the main steam system is very clean. Consequently, there is no mechanism to prevent the disk from dropping from the full open position to the valve seat.

Basis for Alternate Testing

Based on the history of good valve performance, a design that is very reliable and the burden of performing the diagnostic test measurements every planned cold shutdown, the test interval will be extended to each reactor refueling outage and a sampling plan applied to the use of the diagnostic test equipment. The sampling plan will consist of testing one valve each reactor refueling with the diagnostic test equipment on a rotating basis.

Alternate Testing

The diagnostic test described above will be performed on one main steam non-return valve during each reactor refueling outage. The tests will be conducted on a rotating basis for each of the three valves during subsequent refueling outages. If the diagnostic test results indicate binding of the disk, the other two valves will be tested with the diagnostic test equipment. The open position is verified by the normal operation of the main steam system.

RELIEF REQUEST VNC-5

System : Refer to Table VNC-5

Valve(s): Refer to Table VNC-5

Category: Refer to Table VNC-5

Class : Refer to Table VNC-5

Function: Refer to Table VNC-5

ISTC Code Requirements Which Will Not Be Met

ISTC-5131 requires that the stroke time of active pneumatically operated valves shall be measured, a limiting value of full-stroke time specified by the owner, the valve stroke be measured to at least the nearest second, and any abnormality or erratic action be recorded and evaluated.

ISTC-5132 requires that measured stroke times be compared to the acceptance criteria in this section.

ISTC-5133 requires that corrective action be taken if the measured stroke times do not meet the acceptance criteria in ISTC-5122.

Basis for Alternate Testing

ISTC-1200(b) excludes "valves used only for system control, such as pressure regulating valves" from the testing requirements of the Code. It is not the intent of the Code to test the regulating function of control valves.

However, if these valves have a safety function to fail to an open of close position, then the testing requirements for power-operated valves are imposed. Code Case OMN-8 provides alternative rules for inservice testing of power-operated valves that are used for system control and have a fail safe safety function. Code Case OMN-8 is given below.

> Inquiry: What alternative requirements to those of ASME/ANSI OMa-1988, Part 10, para. 4.2 through OM Code-1995, ISTC 4.2 may be used for power-operated control valves that have only a fail safe safety function?

Reply: It is the opinion of the Committee that the requirements of ASME/ANSI OMa-1988, Part 10, para.4.2.1.4, Power-Operated Valve Stroke Testing; para. 4.2.1.8, Stroke Time Acceptance Criteria; and para. 4.2.1.9(b) need not be met. All other applicable requirements of para. 4.2 shall be met for ASME/ANSI OMa-1988, Part 10.

Further, the requirements of OM Code-1995, ISTC 4.2.4, Power-Operated Valve Stroke Testing; ISTC 4.2.8, Stroke Time Acceptance Criteria; and ISTC 4.2.9(b) need not be met. All other applicable requirements of the paragraph shall be met.

Any abnormality or erratic action experienced during valve exercising shall be recorded in the record of tests, and an evaluation shall be made regarding need for corrective action.

The power-operated control valves listed in Table VNC-5 have only a fail safe function. We propose applying the alternative rules described in Code Case OMN-8 to the control valves listed in Table VNC-5. This alternative to the requirements of ISTC-5131, ISTC-5132 and ISTC-5133 provides an acceptable level of quality and safety.

Alternate Testing

The control valves listed in Table VNC-5 will be tested to the requirements of Code Case OMN-8.

Table VNC-5

Valve Number	System	OM Category	ASME Class	Function
2-FW-FCV-2478 2-FW-FCV-2488 2-FW-FCV-2498	Feedwater	B	NC	Main Feedwater Regulating Valves
2-FW-HCV-255A 2-FW-HCV-255B 2-FW-HCV-255C	Feedwater	B	NC	Main Feedwater Regulating Bypass Valves

RELIEF REQUEST VNC-6

System : EE

Valve(s) : 1-EE-013
1-EE-031

Category : NC

Class : 3

Function: Diesel Fuel Oil Pump Discharge Check Valves

ISTC Code Requirements
Which Will Not Be Met

ISTC 5221(c)(3) states that "At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years."

Justification for Disassembly and Examination

Each fuel oil supply line is a dedicated flow path with no cross connect line to the other fuel oil supply lines. Therefore, the check valves cannot be back pressure tested with flow. Given the system configuration and the accessibility of the check valves, disassembly and examination is the preferred method to verify valve closure.

Basis for Alternative to (ISTC-5221(c)(3))

These valves can be disassembled and examined while the plant is operating. From a work planning standpoint, the worst time to schedule the removal of a diesel fuel oil supply train from service for the purpose of valve disassembly is during a refueling outage. Most major work activities can only be performed during the refueling outage. These activities are carefully planned to maximize the availability of safety related equipment and to preserve plant safety margin. Performing work during the refueling outage that could be performed during normal operation unnecessarily complicates the outage planning process and may result in a reduced margin of plant safety. Disassembling the valves on a reactor refueling frequency but not necessarily during refueling outages meets the intent of ISTC-5221(c)(3), and does not compromise plant safety during the refueling outage.

Alternate Testing

These valves will be exercised full open every three months. One valve in the group will disassembled and examined on a reactor refueling test frequency (nominally every 18 months but not to exceed 24 months) and on a rotating basis to verify closure per the requirements of ISTC 4.5.4(c).

5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

A record of each pump will be maintained in accordance with ISTB-9100 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other identification number,

2) a copy or summary of the manufacturer's acceptance test report if available,

3) a copy of the pump manufacturer's operating limits.

A record of inservice test plans will be maintained in accordance with ISTB-9200 that includes the following:

1) category of each pump,

2) the hydraulic circuit to be used,

3) the location and type of measurement for the required test parameters and

4) the method of determining reference values which are not directly measured by instrumentation.

A record of test results will be maintained in accordance with ISTA-9230 that includes the following:

1) equipment identification,

2) date of test or examination,

3) reason for test or examination (e.g., post maintenance, routine inservice test or examination, establishing reference values, etc.),

4) test or examination procedure used;

5) identification of test equipment used;

6) calibration records;

7) values of measured parameters;

8) comparison with allowable ranges of test and examination values, and analysis of deviations;

9) requirement for corrective action; and

10) printed (or typed) name and signature of the person(s) responsible for conducting and analyzing the test and examination.

In accordance with ISTA-9240, the Owner shall maintain records of corrective action that shall include a summary of the corrective actions made, the subsequent inservice test or examination, confirmation of operational adequacy, and the printed (or typed) name and signature of the person(s) responsible for the corrective action and verification of results.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

5.2 VALVE INSERVICE TESTING PROGRAM

A record of each valve will be maintained in accordance with ISTC-9110 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other unique identification number,

2) a copy or summary of the manufacturer' acceptance test report if available,

3) preservice test results and

4) limiting value of full stroke time.

This IST Program Plan meets the requirements of ISTC-9200, Test Plans. A record of test results will be maintained in accordance with ISTA-9230. A record of corrective action will be maintained in accordance with ISTA-9240. The Valve Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

6.0 QUALITY ASSURANCE PROGRAM

The Pump and Valve Inservice Test Program activities will be conducted in accordance with the Technical Specifications for Surry Power Station.