

ATTACHMENT 1

**SUMMARY OF CHANGES TO THE
SURRY UNIT 1
THIRD INTERVAL
IST PROGRAM**

REVISION 0

ATTACHMENT 1

SUMMARY OF CHANGES TO THE SURRY UNIT 1 IST PROGRAM

The following summary describes the changes from Revision 5 of the Surry Power Station Unit 1 Inservice Testing (IST) Program for the second IST interval to Revision 0 for the third IST interval. In addition to describing the changes to the program, the summary gives the approval mechanism for each relief request given in Sections 3.6 and 4.6.

Revision 5 for the second IST interval was submitted on July 24, 1992 (Serial No. 92-286). The NRC issued a Safety Evaluation Report (SER) for Revision 5, by letter dated March 22, 1993. Changes to Revision 5 were issued to the NRC by letters dated October 8, 1992 (Serial No. 92-610) and May 6, 1993 (Serial No. 93-046). The summary given below presents all changes to the IST Program from Revision 5 dated July 24, 1993, and identifies the corresponding letter if the change had been subsequently submitted. Changes to the IST Program Plans are highlighted by a revision bar in the right margin.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

1.0 INTRODUCTION

The introduction was expanded to describe the transition from the second to the third IST interval, and the approval by the NRC of the 1989 Edition of Section XI.

2.0 PROGRAM DESCRIPTION

Reference to Section XI, the 1980 Edition through the Winter 1980 Addendum was replaced by reference to addenda through the 1988 Addenda and editions through the 1989 Edition.

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

References to Section XI, the 1980 Edition through the Winter 1980 Addendum were replaced by references to addenda through the 1988 Addenda and editions through the 1989 Edition and ASME/ANSI Edition OM-87, Part 6, Addenda OMa-1988.

3.2 PROGRAM IMPLEMENTATION

Verb tense changed from future tense to present tense.

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3.3 PROGRAM ADMINISTRATION

Reference to updating the IST Program a minimum of at least once every 40 months was deleted. Updating the program periodically is addressed in an internal administrative procedure.

3.5 PUMP INSERVICE TEST TABLES

OM Part 6 does not require the measurement of bearing temperature. Therefore, references to bearing temperature were deleted.

UNIT 1
PUMP
NUMBER

COMMENT/PROGRAM CHANGE

1-RH-P-1A 1-RH-P-1B	Program Change: Measurements of inlet and discharge pressures were deleted. Differential pressure is measured directly.
1-RS-P-2A 1-RS-P-2B	Withdrew Relief Request P-4. Refer to the discussion in Section 3.6.
1-RS-P-1A 1-RS-P-1B	Withdrew Relief Request P-5. Refer to the discussion in Section 3.6.
1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Program change: The measurement of discharge pressure was deleted. Refer to Relief Request P-11.
1-EE-P-1C	Program change: Diesel fuel oil transfer pump 1-EE-P-1C was moved from the Unit 2 IST Program to the Unit 1 IST Program.

3.6 PUMP TEST PROGRAM RELIEF REQUESTS

The following summarizes the changes to relief requests since Revision 5. It also contains a description of the approval mechanism for each relief request. That is, the summary indicates whether the approval is:

- 1) through a position in Generic Letter 89-04,
- 2) through a previously issued NRC SER or

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- 3) obtained using a relief request that will need approval by the NRC. Relief requests requiring NRC approval are marked with an asterisk *.

Unit 1
Relief
Request

Change

- P-0 This relief request number is no longer active.
- P-1* Reference to using vibration velocity (in/sec) instead of vibration displacement (mils) was deleted because vibration velocity is allowed by OM Part 6. The Revision 5 version of P-1 contained a note describing the use of a minimum value (0.5 in/sec) for vibration reference values. Reference to this minimum reference was retained in the current version. Surry Power Station was given a three year period ending in August, 1993 to use the minimum reference value. Surry Power Station requested by letter dated June 29, 1993 (Serial No. 93-206) that the use of a minimum value be extended for a period of three years.
- Use of a minimum vibration reference value was recently granted to North Anna Power Station in the NRC SER received in September of 1993 (TAC NOS. M86645 & M86646). No period restrictions were placed on North Anna.
- P-2 to P-3 These relief request numbers are no longer active.
- P-4 Relief request is being withdrawn. The Revision 5 version of P-4 dealt with the outside recirculation spray pumps and requested relief for:
- 1) testing every 24 months instead of quarterly testing,
 - 2) waiting two minutes instead of five minutes before measuring test quantities and
 - 3) calculating inlet pressure.

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For Item 1, the recirculation spray pumps are deep draft pumps that are maintained dry. OM Part 6, Paragraph 5.5 allows a 24 month test frequency for this type of pump. For Item 2, OM Part 6, Paragraph 5.6 only requires a two minute run time before measuring the test quantities. For Item 3, the NRC concluded in the NRC SER dated March 22, 1993 (TAC Nos. M84333, M84334, M83165, and M83166) for P-4 that calculating the inlet pressure from the surface level is in accordance with the provisions of the Code, and therefore, relief is not required.

P-5 Relief request is being withdrawn. The Revision 5 version of P-5 dealt with the inside recirculation spray pumps and requested relief for:

- 1) testing every 24 months instead of quarterly testing and
- 2) measuring inlet and differential pressure.

For Item 1, the recirculation spray pumps are deep draft pumps that are maintained dry. OM Part 6, Paragraph 5.5 allows a 24 month test frequency for this type of pump. For Item 2, the NRC concluded in the NRC SER dated March 22, 1993 (TAC Nos. M84333, M84334, M83165, and M83166) for P-5 that calculating the inlet pressure from the surface level is in accordance with the provisions of the Code, and therefore, relief is not required.

P-6 This relief request number is no longer active.

P-7 The request to stop measuring inlet pressure was deleted for the residual heat removal pumps. OM-6 does not require measuring inlet pressure if differential pressure is measured directly. The NRC SER dated August 27, 1990 (TAC Nos. 655555 and 65556) granted approval for the extended cold shutdown testing frequency.

P-8 to P-10 These relief request numbers are no longer active.

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- P-11* The basis was expanded to describe the relationship between flow and tide level for the emergency service water pumps. Because the discharge pressure is constant (i.e., atmospheric pressure) and flow is a function of tide level, discharge pressure need not be measured. The rest of the relief request that dealt with the use of a reference pump curve was approved by the NRC SER dated March 22, 1993 (TAC Nos. M84333, M84334, M83165, and M83166).
- P-12 to P-15 These relief request numbers are no longer active.
- P-16 The date for installing the two additional control room air conditioning systems was changed from the end of 1992 to the end of 1993. However, the final date for the completion of the instrumentation installation has not changed. This relief request was approved by the NRC SER dated June 26, 1992 (TAC Nos. M80297 and M80298).
- P-17 The acceptance criteria were changed to reflect the criteria in OM Part 6, Table 3b. The basis for this relief request was approved by the NRC SER dated June 26, 1992 (TAC Nos. M80297 and M80298).
- P-18 This relief request number is no longer active.
- P-19 The acceptance criteria were changed to reflect the criteria in OM Part 6, Table 3b. The basis for this relief request was approved by the NRC SER dated March 22, 1993 (TAC Nos. M84333, M84334, M83165, and M83166).
- P-20 Relief request is being withdrawn. Relief Request P-20 requested relief from measuring the static inlet pressure on a pump that is already in operation. This relief request is being withdrawn because OM Part 6 does not require measuring static inlet pressure.
- P-21* Calibrating the inlet pressure instruments for the boric acid transfer pumps to an accuracy within $\pm 2\%$ has proven difficult and may be impractical in

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the future with the current instruments. Calibrating the inlet pressure instruments to an accuracy within $\pm 3\%$ would be practical. 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 if the discharge pressure gauge is calibrated to an accuracy within $\pm 1.75\%$.

Relief for going to the $\pm 3\%$ is new to this relief request. The remainder of the relief request was approved by the NRC SER dated March 22, 1993 (TAC Nos. M84333, M84334, M83165, and M83166).

3.6 ALTERNATIVE TESTING FOR NON-CODE PUMPS

This section describes why certain non-Code components that are included in the IST Program are not tested to the provisions of the Code and describes the alternative tests. The non-Code alternative tests are not relief requests and do not require approval by the NRC.

Unit 1
Non-Code
Alternative
Test

Change

PNC-1

The Revision 5 version of PNC-1 dealt with the diesel fuel oil pumps and described the following deviations from the Code:

- 1) measuring test quantities when the pump automatically starts on a low tank level signal instead of waiting five minutes,
- 2) measuring vibration velocity instead of vibration displacement and bearing temperature and
- 3) measuring inlet and differential pressure.

The waiting period in Item 1 was changed from five minutes to two minutes. The alternative

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test is still necessary even with the waiting period reduced to two minutes by OM Part 6. Item 2 was deleted because OM Part 6 allows the use of vibration velocity and does not require bearing temperature measurement. Item 3 was also deleted because OM Part 6 does not require the measurement of inlet and differential pressure for positive displacement pumps such as the diesel fuel oil transfer pumps. Only discharge pressure need be measured.

Also, pump 1-EE-P-1C was moved from the Unit 2 IST Program to the Unit 1 IST Program and added to PNC-1.

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

References to Section XI, the 1980 Edition through the Winter 1980 Addendum were replaced by references to addenda through the 1988 Addenda and editions through the 1989 Edition and ASME/ANSI Edition OM-87, Part 10, Addenda OMa-1988.

4.2 PROGRAM IMPLEMENTATION

Verb tense changed from future tense to present tense.

References to Section XI were replaced by references to OM Part 10.

4.3 PROGRAM ADMINISTRATION

Reference to updating the IST Program a minimum of at least once every 40 months was deleted. Updating the program periodically is addressed in an internal administrative procedure.

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4.4 VALVE INSERVICE TEST TABLES

References to Section XI were replaced by references to OM Part 10 in the description of the valve tables.

Valves that were added to the program are identified by an asterisk *.

Unit 1
Valve
Number

Comment

1-BD-TV-100A to 1-BD-TV-100F	Program Change: Relief Request V-34 was withdrawn.
1-CC-1105, 1106, 1-CC-1107, 1188, 1-CC-1189, 1190	Program Change: Relief Request V-45 was replaced by Reactor Refueling Justification RRV-7.
1-CC-LCV-101	Program Change: Relief Request V-47 was revised to reflect the changes in the new Code.
1-CC-RV-112A to C, 1-CC-RV-119A & B, 1-CC-RV-122, 123, 1-CC-RV-124, 1-CC-RV-138A & B	Program Change: Relief Request V-1 was withdrawn.
1-CC-RV-150	This relief valve was removed from the system. Program Change: Valve was deleted from the IST Program.
1-CC-TV-107	This trip valve was removed from the system. Program Change: Valve was deleted from the IST Program.
1-CC-TV-140A* & B*	These trip valves were added to the system to replace 1-CC-TV-107. They must close to isolate the RCP thermal barrier cooling piping inside containment.

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Program Change: Valves were added to the IST Program to be tested to the closed position every cold shutdown. Refer to Cold Shutdown Justification CSV-27.

1-CH-230

Following an accident, this volume control tank (VCT) discharge check valve must close after recirculation mode transfer to prevent contaminated sump water from entering the VCT via the seal water heat exchanger relief valve 1-CH-RV-1382B.

Program Change: The valve category was changed from C to A, and a closure test and leakage test were added. The closure test will be performed every reactor refueling as discussed in Reactor Refueling Justification RRV-8.

1-CH-258

1-CH-267

1-CH-276

Program Change: Relief Request V-14 was replaced by Reactor Refueling Justification RRV-1.

1-CH-309

Program Change: This valve was moved from Cold Shutdown Justification CSV-20 to Reactor Refueling Justification RRV-6 and the test frequency was changed from cold shutdown to reactor refueling.

1-CH-FCV-1113B,

1-CH-FCV-1114B

It was determined that the failure of these valves to close will not reduce the operator's ability to manually use the emergency boration system.

Program Change: Valves were deleted from the IST Program.

1-CH-LCV-1115B & D

Following an accident, these valves isolate the reactor water storage tank (RWST) to prevent contaminated sump water from entering the RWST after recirculation mode transfer.

Program Change: The valve category was changed from B to A, and a leakage test was added.

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1-CH-MOV-1267A
1-CH-MOV-1269A
1-CH-MOV-1270A

These valves are passive. They do not have to change position to fulfill their safety functions.

Program Change: The exercise test was deleted.

1-CH-RV-1203
1-CH-RV-1382A & B

Program Change: Relief Request V-1 was withdrawn.

1-CH-TV-1204B

Program Change: Relief Request V-34 was withdrawn.

1-CS-MOV-101A to D

Program Change: Relief Request V-39 was withdrawn.

1-CV-TV-150B

Program Change: Relief Request V-34 was withdrawn.

1-CW-117

At one time, this normally closed manual valve would be opened following initiation of an event to reduce the flowrate through the essential heat exchangers and thus conserve the cooling water inventory in the intake canal. However, it has been determined that this vent valve is no longer required for canal water inventory concerns.

Program Change: Valve was deleted from the IST Program.

1-DA-TV-100A & B
1-DA-TV-103A & B

Program Change: Relief Request V-34 was withdrawn.

1-DG-TV-108A & B

Program Change: Relief Request V-34 was withdrawn.

1-EE-19
1-EE-RV-105
1-EE-SOV-104

Program Change: These valves were moved from the Unit 2 IST Program to the Unit 1 IST Program.

1-EE-RV-103
1-EE-RV-105
1-EE-RV-106
1-EE-RV-108

Program Change: Relief Request V-1 was withdrawn.

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1-EE-SOV-100
1-EE-SOV-101
1-EE-SOV-104
1-EE-SOV-105

Program Change: Relief Request V-36 was replaced by Non-Code Alternative Testing VNC-4. Valve 1-EE-SOV-104 was added to VNC-4.

1-EG-SOV-100A & B
3-EG-SOV-300A & B

Program Change: Relief Request V-37 was replaced by Non-Code Alternative Testing VNC-3.

1-GW-TV-100 to
1-GW-TV-107,
1-GW-TV-111A & B

Program Change: Relief Request V-34 was withdrawn.

1-IA-446

Program Change: Relief Request V-39 was withdrawn.

1-IA-938, 939

Program Change: Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6.

1-IA-RV-114, 115

Program Change: Relief Request V-1 was withdrawn.

1-IA-TV-100

Program Change: Relief Requests V-34 and 39 were withdrawn.

1-LM-TV-100A to H

Program Change: Relief Requests V-34 and 39 were withdrawn.

1-MS-NRV-101A to B

Program Change: Relief Request V-48 was replaced by Cold Shutdown Justification CSV-32.

1-MS-RV-101A to C

Program Change: Relief Request V-47 was revised to reflect the changes in the new Code.

1-MS-SV-101A to C,
1-MS-SV-102A to C,
1-MS-SV-103A to C,
1-MS-SV-104A to C,
1-MS-SV-105A to C

Program Change: Relief Request V-1 was withdrawn.

1-MS-TV-120

This valve is a mechanical trip device valve that is normally open. It trips closed to protect the turbine on the auxiliary

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feedwater pump from over speed conditions and has to be locally reset. The valve is passive in the open position and need not be tested.

Program Change: Valve was deleted from the IST Program.

1-RC-160

Program Change: Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6.

1-RC-PCV-1455C
1-RC-PCV-1456

These power operated relief valves need to open on setpoint to protect the reactor coolant system from overpressurization when the reactor vessel is cooled down to less than 275 °F.

Program Change: A setpoint test was added and Relief Request V-34 was withdrawn.

1-RC-SOV-100A1 & 2
1-RC-SOV-100B1 & 2

Program Change: Relief Request V-31 was replaced by Cold Shutdown Justification CSV-33 and Relief Request V-34 was withdrawn.

1-RC-RV-1551A to C

Program Change: Relief Request V-1 was withdrawn.

1-RH-FCV-1605
1-RH-HCV-1758

Program Change: Relief Request V-47 was revised to reflect the changes in the new Code.

1-RH-RV-1721

Program Change: Relief Request V-1 was withdrawn.

1-RL-3 & 5

Program Change: Relief Request V-39 was withdrawn.

1-RM-3

Program Change: Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6.

1-RM-TV-100A to C

Program Change: Relief Request V-34 was withdrawn.

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- 1-RS-46 & 52 Program Change: Relief Request V-39 was withdrawn.
- 1-RS-MOV-155A & B Program Change: Relief Request V-39 was withdrawn.
- 1-SI-25 Following an accident, this valve isolates the reactor water storage tank (RWST) to prevent contaminated sump water from entering the RWST after recirculation mode transfer.
- Program Change: The valve category was changed from C to A, a leakage test were added and Relief Request V-28 was replaced by Reactor Refueling Justification RRV-5.
- 1-SI-46A & B Program Change: Relief Request V-21 was replaced by Reactor Refueling Justification RRV-2.
- 1-SI-50 & 58
- 1-SI-79, 82, 85, Program Change: Relief Request V-27 was revised to reference only back seat testing of valves 1-SI-88 and 238, and 1-SI-91 and 239, and 1-SI-94 and 240 in pairs. The reference to test frequency was removed from V-27 for all valves and replaced by Reactor Refueling Justification RRV-4.
- 1-SI-88, 91, 94,
1-SI-224, 225,
1-SI-226, 227,
1-SI-228, 229,
1-SI-235, 236,
1-SI-237, 238,
1-SI-239, 240,
1-SI-241, 242, 243
- 1-SI-107, 109, Program Change: The justification for testing every refueling was moved to Reactor Refueling Justification RRV-3. Relief Request V-26 was revised to describe a sampling plan for non-intrusive testing techniques.
- 1-SI-128, 130,
1-SI-145, 147
- 1-SI-150 & 174 Program Change: Relief Request V-39 was withdrawn.
- 1-SI-201 & 207 These check valves are on a 3/4 inch supply line from the RWST to the LHSI pump seals. This line has been permanently isolated. Therefore, the valves no longer have a safety function.

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Program Change: Valves were deleted from the IST Program.

1-SI-234

Program Change: Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6.

1-SI-301 & 311

Program Change: Relief Request V-39 was withdrawn.

1-SI-410

Program Change: Relief Request V-28 was replaced by Reactor Refueling Justification RRV-5.

1-SI-MOV-1860A & B

Program Change: Relief Request V-39 was withdrawn.

1-SI-MOV-1867C & D
1-SI-MOV-1869A

Program Change: Relief Request V-39 was withdrawn.

1-SI-MOV-1885A to
1-SI-MOV-1885D

Following an accident, these valves isolate the reactor water storage tank (RWST) to prevent contaminated sump water from entering the RWST after recirculation mode transfer.

Program Change: The valve category was changed from B to A, and a leakage test was added.

1-SI-RV-1845A to C

Program Change: Relief Request V-1 was withdrawn.

1-SI-TV-101B

Program Change: Relief Request V-34 was withdrawn.

1-SS-TV-100A & B,
1-SS-TV-101A & B,
1-SS-TV-102A & B,
1-SS-TV-104A & B,
1-SS-TV-106A & B

Program Change: Relief Request V-34 was withdrawn.

1-SW-108
1-SW-113
1-SW-130
1-SW-262
1-SW-268

The design basis for the charging pump service water system is being reevaluated. A full flow acceptance criteria will not be available until this evaluation is complete. In the mean time, these valves will be

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disassembled and inspected.

Program Change: The valves will be disassembled and inspected. Refer to Relief Request V-50. Also, the ASME Class for valve 1-SW-130 was changed from Class 3 to non-Class.

1-SW-263

This valve has no remote position indication. Therefore, there are no Section XI test requirements.

Program Change: Valve was deleted from the IST Program.

1-SW-PCV-100A to
1-SW-PCV-100C,
1-SW-PCV-101A to
1-SW-PCV-101C,
1-SW-TCV-108A to
1-SW-TCV-108C

Program Change: Relief Request V-47 was revised to reflect the changes in the new Code.

1-VG-TV-109A & B

Program Change: Relief Request V-34 was withdrawn.

1-VP-12

Program Change: Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6.

1-VS-MOV-100A to
1-VS-MOV-100D,
1-VS-MOV-101 & 102

Program Change: Relief Request V-39 was withdrawn.

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4.5 VALVE TEST PROGRAM RELIEF REQUESTS

The following summarizes the changes to relief requests since Revision 5. It also contains a description of the approval mechanism for each relief request. That is, the summary indicates whether the approval is:

- 1) through a position in Generic Letter 89-04,
- 2) through a previously issued NRC SER or
- 3) obtained using a relief request that will need approval by the NRC. Relief requests requiring NRC approval are marked with an asterisk *.

Unit 1
Relief
Request

Change

- V-1 Relief request is being withdrawn. The Revision 5 version of V-1 requested relief from testing safety and relief valves in accordance with PTC-25.3-1976 and to use OM Part 1 instead. OM Part 10 references OM Part 1 for safety and relief valve testing.
- V-2 to These relief request numbers are no longer active.
V-4
- V-5 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the group given in V-5 (1-FW-10, 41 and 72) must be disassembled every refueling outage. V-5 describes the disassembly and inspection of one valve from a group of three valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.
- V-6 to These relief request numbers are no longer active.
V-13

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- V-14 Relief request is being withdrawn. Relief Request V-14 was replaced by Reactor Refueling Justification RRV-1. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical. According to OM Part 10, Section 6.2, the test plan must justify the deferral of stroke testing.
- V-15 to V-19 These relief request numbers are no longer active.
- V-20 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the group given in V-20 (1-SI-47 and 56) must be disassembled every refueling outage. V-20 describes the disassembly and inspection of one valve from a group of two valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.
- V-21 Relief request is being withdrawn. Relief Request V-21 was replaced by Reactor Refueling Justification RRV-2. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical.
- V-22 to V-25 These relief request numbers are no longer active.
- V-26 Relief Request V-26 was revised to describe a sampling program for non-intrusive techniques used in testing the SI accumulator discharge check valves. The sampling program is as follows.
- During the first refueling outage where non-intrusive techniques are used, all valves in the group will be tested to verify that the techniques verify valve obturator movement. During subsequent refueling outages, flow testing will be performed on all valves in the group, but the non-

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intrusive techniques need be applied only to one valve in each group, on a rotating basis, unless indications of problems are identified. In this case, all valves in the group will be subjected to the non-intrusive techniques. The sampling program is in accordance with Generic Letter 89-04, position 2. A similar non-intrusive technique sampling program was approved for use by North Anna Power Station in the NRC SER received in September of 1993 (TAC NOS. M86645 & M86646).

The justification for going to a reactor refueling frequency was moved to RRV-3. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical. The alternative test method was changed from disassembly and inspection to using non-intrusive techniques to verify that the check valves go to the full open position.

V-27

The portion of Relief Request V-27 which dealt with test frequency was replaced by Reactor Refueling Justification RRV-4. RRV-4 deals with the cold leg and hot leg SI check valves. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical. The portion of Relief Request V-27 which dealt with check valve pairs 1-SI-88 and 238, 1-SI-91 and 239, and 1-SI-94 and 240 remains.

V-28

Relief request is being withdrawn. Relief Request V-28 was replaced by Reactor Refueling Justification RRV-5. RRV-5 deals with the SI cross tie check valves (1-SI-25 and 410). OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical. The Revision 5 version of V-28 indicated that 1-SI-25 would be disassembled and inspected every other outage. Reference to the disassembly and inspection every other outage was deleted from RRV-5. The test method and frequency are in accordance with OM Part 10, Paragraph 4.3.2.4 (c).

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V-29 & V-30 These relief request numbers are no longer active.

V-31 Relief request is being withdrawn. Relief Request V-31 was replaced by Cold Shutdown Justification CSV-33. CSV-33 deals with the head vent isolation valves and was originally a relief request because there could exist plant conditions during some cold shutdowns that prevent testing of these valves. Because OM Part 10 allows for a testing frequency as long as a reactor refueling frequency, relief from Code requirements is no longer necessary. As shown by the test frequency description, the appropriate test plan justification is a cold shutdown justification and not a reactor refueling justification.

V-32 & V-33 These relief request numbers are no longer active.

V-34 Relief request is being withdrawn. The Revision 5 version of Relief Request V-34 requested relief from applying an alert range acceptance criteria for stroke time to rapid acting valves (i.e., valves that stroke in less than two seconds). OM Part 10, Paragraph 4.2.1.8(e) addresses rapid acting valves. Therefore, relief from Code requirements is no longer necessary.

V-35 This relief request number is no longer active.

V-36 Relief request is being withdrawn. Relief Request V-36 was replaced by Non-Code Alternative Testing VNC-4. The valves in VNC-4 (1-EE-SOV-100, 101 and 105) are non-Code valves. According to the Minutes of Public Meetings on Generic Letter 89-04, "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." The non-Code

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IST PROGRAM

alternative testing given in Section 4.8 documents the method for showing continued operability for these valves.

V-37 Relief request is being withdrawn. The non-Code air start solenoid valves were transferred to Non-Code Alternative Testing VNC-3. For the reasons given above, a 'request for relief' is not necessary.

V-38 This relief request number is no longer active.

V-39 Relief request is being withdrawn. The Revision 5 version of Relief Request V-39 requested relief from individually leak testing containment isolation valves and allowing groups of valves to be tested together. OM Part 10, Paragraphs 4.2.2.3(e) and (f) allow for the testing of valve combinations. Therefore, relief from Code requirements is no longer necessary.

V-40 This relief request number is no longer active.

V-41 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the groups given in V-41 (1-FW-144, 159 and 174 in one group and 1-FW-148, 163 and 178 in another group) must be disassembled every refueling outage. V-41 describes the disassembly and inspection of one valve from each group of three valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

Also, reference to part stroke exercising every three months was deleted. There is no flow

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instrumentation or other means to detect partial flow.

- V-42 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the group given in V-42 (1-MS-176, 178 and 182) must be disassembled every refueling outage. V-42 describes the disassembly and inspection of one valve from a group of three valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

- V-43 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the groups given in V-43 (1-CS-105 and 127 in one group, 1-CS-13 and 24 in another group and 1-RS-11 and 17 in another group) must be disassembled every refueling outage. V-43 describes the disassembly and inspection of one valve from each group of two valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.

- V-44 Relief request is being withdrawn. Relief Request V-44 was replaced by Reactor Refueling Justification RRV-6. RRV-6 deals with certain containment isolation valves located inside containment that are subject to leakage testing. The Revision 5 version of V-44 requested relief from performing a back seat test every cold shutdown. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during

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reactor refuelings if testing during normal operation and cold shutdown is impractical.

V-45 Relief request is being withdrawn. Relief Request V-45 was replaced by Reactor Refueling Justification RRV-7. RRV-7 deals with the RCP thermal barrier isolation check valves located inside containment that are subject to back seat testing. The Revision 5 version of V-45 requested relief from performing a back seat test every cold shutdown. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 allow for valves to be tested during reactor refuelings if testing during normal operation and cold shutdown is impractical.

V-46 The Code requirement reference was changed from Section XI, IWV to OM Part 10. OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each check valve in the group given in V-46 (1-SW-313, 323 and 2-SW-333) must be disassembled every refueling outage. V-46 describes the disassembly and inspection of one valve from a group of three valves. This test frequency is in accordance with Generic Letter 89-04, Position 2.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

V-47 The Revision 5 version of V-47 submitted on July 24, 1992, requested relief from determining the alert status as required by the old Code. In the NRC SER received in March of 1993, the NRC reviewer determined that V-47 was not necessary because OM Part 10 does not require the determination of the alert acceptance criteria. However, due to the data scatter displayed by the valves in V-47, relief from the requirements of OM 10, Paragraphs 4.3.1.8(b) and (d) is necessary. Also, relief from measuring the full-stroke time

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from the initiation of the actuating signal was added.

V-48 Relief request is being withdrawn. Interim Relief Request V-48 was replaced by Cold Shutdown Justification CSV-32. The Revision 5 version of V-48 requested an interim period from testing the main steam non-return valves until an alternative test method could be developed. This alternative method was developed during the Surry Unit 2 1993 refueling outage and is described in CSV-32. CSV-32 was sent to the NRC by letter dated May 6, 1993 (Serial No. 93-046).

V-49 Relief request is being withdrawn. The Revision 5 version of V-49 requested relief from IWV-3427(b) which required trending of leakages for Category A valves larger than six inches. OM-Part 10 does not have a similar requirement. Therefore, relief from Code requirements is no longer necessary.

V-50 These relief request is being added for check valves 1-SW-108, 113, 130, 262 and 268. The design basis for the charging pump service water system is being reevaluated. A full flow acceptance criteria will not be available until this evaluation is complete. In the mean time, these valves will be disassembled and inspected. The test frequency is in accordance with Generic Letter 89-04, Position 2.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

V-51 This relief request is being added and applies to containment isolation valves subject to Appendix J, Type C leak testing. For cases where a valve has exceeded its permissible leakage rate but the overall containment leakage is below 0.6La, and the repair or replacement of the valve will have an adverse impact on plant startup and/or continued operation, an evaluation can be used as

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corrective action. A similar relief request was approved for use by North Anna Power Station in the NRC SER received in September of 1993 (TAC NOS. M86645 & M86646).

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

References to IWV were replaced with references to OM Part 10. Also, a section was added to each justification which gives a summary of the testing frequency. The following summarizes the changes to cold shutdown justifications since Revision 5.

Unit 1
Cold
Shutdown
Just

Change

CSV-1	Added test frequency summary.
CSV-2 and CSV-3	These cold shutdown justification numbers are no longer active.
CSV-4	Reference to full flow testing check valves 1-FW-142, 157 and 172 was added. Also, a test frequency summary was added.
CSV-5	Added test frequency summary.
CSV-6	Added the phrase "when the reactor coolant pumps are secured" and a test frequency summary.
CSV-7 to CSV-9	Added test frequency summaries.
CSV-10	The relief valve setting was changed from 700 psig to 600 psig. Also, a test frequency summary was added.
CSV-11	Added test frequency summary.
CSV-12	This cold shutdown justification number is no longer active.

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- CSV-13 Added the phrase "when the reactor coolant pumps are secured" and a test frequency summary.
- CSV-14 to CSV-18 Added test frequency summaries.
- CSV-19 Deleted reference to partial stroke testing of check valves 1-CH-225, 227 and 229. These valves will be full stroke tested every quarter when the boric acid concentration is above 100 ppm. Also, a test frequency summary was added.
- CSV-20 Replaced by Reactor Refueling Justification RRV-6.
- CSV-21 Added test frequency summary.
- CSV-22 to CSV-24 These cold shutdown justification numbers are no longer active.
- CSV-25 & CSV-26 Added test frequency summaries.
- CSV-27 Deleted valve 1-CC-TV-107 and added valves 1-CC-TV-140A and B. Also, a test frequency summary was added.
- CSV-28 Deleted reference to part stroke testing the main feedwater bypass valves every three months and added an explanation as to why this testing is not necessary. Also, a test frequency summary was added.
- CSV-29 to CSV-31 Added test frequency summaries.
- CSV-32 Cold Shutdown Justification CSV-32 was added to the IST Program to replace Interim Relief Request V-48. The Revision 5 version of V-48 requested an interim period from testing the main steam non-return valves until an alternative test method could be developed. This alternative method was developed during the Surry Unit 2 1993 refueling outage and is described in CSV-32. CSV-32 was sent to the

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NRC by letter dated May 6, 1993 (Serial No. 93-046).

CSV-33 Cold Shutdown Justification CSV-33 was added to the IST Program to replace Relief Request V-31. CSV-33 deals with the head vent isolation valves and was originally a relief request because there could exist plant conditions during some cold shutdowns that prevent testing of these valves. Because OM Part 10 allows for a testing frequency as long as a reactor refueling frequency, relief from Code requirements is no longer necessary. As shown by the test frequency description, the appropriate test plan justification is a cold shutdown justification and not a reactor refueling justification.

4.7 VALVE TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

Section 4.7 was added to the IST Program and the Revision 5 Section 4.7 was renumbered to Section 4.8. OM Part 10, Sections 4.2.1.2 and 4.2.2.2 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. IWV allowed testing to be deferred only to cold shutdowns. Therefore, no request for relief for testing every reactor refueling is necessary. A number of relief requests were replaced by reactor refueling justifications.

Unit 1
Reactor
Refuel
Just

Change

RRV-1 Reactor Refueling Justification RRV-1 was added to the IST Program to replace Relief Request V-14. No other changes were made to the justification.

RRV-2 Reactor Refueling Justification RRV-2 was added to the IST Program to replace Relief Request V-21. No other changes were made to the justification.

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- RRV-3 The justification for going to a reactor refueling frequency was moved from V-26 to RRV-3 for the SI accumulator discharge check valves. The alternative test method was changed from disassembly and inspection to using non-intrusive techniques to verify that the check valves go to the full open position. A sampling program will be applied to the non-intrusive techniques as described in Relief Request V-26.
- RRV-4 Reactor Refueling Justification RRV-4 was added to the IST Program to replace the test frequency descriptions previously found in Relief Request V-27 for the hot leg, cold leg and HHSI check valves.
- RRV-5 Reactor Refueling Justification RRV-5 was added to the IST Program to replace Relief Request V-28. The Revision 5 version of V-28 indicated that 1-SI-25 would be disassembled and inspected every other outage. Reference to the disassembly and inspection every other outage was deleted from RRV-5. The test method and frequency are in accordance with OM Part 10, Paragraph 4.3.2.4(c).
- RRV-6 Reactor Refueling Justification RRV-6 was added to the IST Program to replace Relief Request V-44. No other changes were made to the justification.
- RRV-7 Reactor Refueling Justification RRV-7 was added to the IST Program to replace Relief Request V-45 and Cold Shutdown Justification CSV-20.
- RRV-8 Reactor Refueling Justification RRV-8 was added to the IST Program to present the basis for testing the VCT discharge check valve 1-CH-230 closed every reactor refueling.

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IST PROGRAM

4.8 ALTERNATIVE TESTING FOR NON-CODE VALVES

The Revision 5 Section 4.7 was renumbered to Section 4.8.

Unit 1
Non-Code
Alternative
Test

Change

- | | |
|-------|--|
| VNC-1 | There is no change to VNC-1. |
| VNC-2 | <u>Non-Code alternative testing is being withdrawn.</u> VNC-2 dealt with valve 1-CW-117 which was deleted from the IST Program. |
| VNC-3 | The air start system solenoid valves 1-EG-SOV-100A and B, and 3-EG-SOV-300A and B were added to VNC-3. These valves were covered by Relief Request V-37 in Revision 5. |
| VNC-4 | Non-Code Alternative Testing VNC-4 was added to the IST Program to replace Relief Request V-36. Also, valve 1-EE-SOV-104 was moved from the Unit 2 IST Program to the Unit 1 IST Program and added to VNC-4. |

5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

References to IWP were replaced with references to OM Part 6, Sections 7.1 to 7.4.

5.2 VALVE INSERVICE TESTING PROGRAM

References to IWV were replaced with references to OM Part 10, Sections 6.1 to 6.4.

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION

UNIT 1

INSERVICE TESTING PROGRAM PLAN

FOR PUMPS AND VALVES

THIRD INSPECTION INTERVAL

MAY 10, 1994 - MAY 10, 2004

REVISION 0

ADDRESSES:

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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 began commercial operation on December 22, 1972. The IST Program Plan is comprised of two independent subprograms - the Pump Inservice Test Program and the Valve Inservice Test Program. The development, implementation and administration of these two programs are detailed in subsequent sections.

This IST Program Plan applies to the third 10-year IST interval for Surry Power Station Unit 1. The third interval starts on May 10, 1994 and ends by May 10, 2004. 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 by letter to the NRC dated November 10, 1992. The NRC responded by letter dated February 16, 1993 granting this exemption.

The Code of Federal Register 10CFR50.55a(f)(4)(ii) states in part that the 10-year IST interval "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." As described in paragraph (b)(2) of 10 CFR 50.55a that was approved for use on September 8, 1992 by the Federal Register, Vol. 57, No. 152, "references to Section XI of the ASME Boiler and Pressure Vessel Code refer to Section XI, Division 1, and include addenda through the 1988 Addenda and editions through the 1989 Edition." The IST Program Plan for the third 10-year interval for Surry Unit 1 complies with these addenda and edition.

2.0 PROGRAM DESCRIPTION

This Inservice Testing Program for ISI Class 1, 2, 3 and NC pumps and valves meets the requirements of Subsections IWP and IWV of Section XI of the ASME Boiler and Pressure Vessel Code, addenda through the 1988 Addenda and editions through the 1989 Edition. Where these requirements are determined to be impractical, specific requests for relief have been written and included in the program plan attached.

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

Highly reliable safety-grade equipment is a vital consideration in the operation of a nuclear generating station. To help assure operability, the Surry Power Station Unit 1 Pump Inservice Test Program was developed.

The Program is designed to detect and evaluate significant hydraulic or mechanical changes in the operating parameters of vital pumps and to initiate corrective action when necessary. As described in Section 2, the Program must meet the requirements of Subsection IWP, of Section XI of the ASME Boiler and Pressure Vessel Code. Subsection IWP, addenda through the 1988 Addenda and editions through the 1989 Edition, references Part 6, Edition OM-87, ASME/ANSI, Operation and Maintenance of Nuclear Power Plants, Addenda OMA-1988. Therefore, the Program is based on the requirements of Part 6, along with NRC Staff guidelines provided in Generic Letter 89-04 for complying with certain provisions of 10CFR50.55a(f).

The Nuclear Regulatory Commission and Code Committee recognized that design differences among plants may render impractical certain Code requirements. Where such impracticalities exist, they have been substantiated as exceptions as allowed by the Code. Alternate testing requirements have been proposed when warranted.

3.2 PROGRAM IMPLEMENTATION

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. Since the safeguards pumps are normally in standby mode, periodic testing of this equipment is especially important. The Surry Power Station Unit 1 Inservice Test 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. In most cases, test parameters are measured with normal plant instrumentation. This approach simplifies the test program and promotes timely completion of periodic surveillance testing. When permanently installed instrumentation is not available, portable instrumentation is used to record the required parameters.

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.

Each pump in the Pump Inservice Test Program is tested according to a detailed test procedure. The procedure include, as minimum:

- 1) References: This section identifies references applicable to Technical Specifications and other necessary material as drawings.
- 2) Purpose: This section identifies test objectives.
- 3) Initial Conditions: 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 Pump Inservice Test Program 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 operations and engineering staffs at Surry Power Station are responsible for administration and execution of the Pump Inservice Test Program. The third 10-year interval IST Program will be officially implemented on May 10, 1994 and governs pump testing for a 120 month period. Prior to the end of the 120 month period, the Program will be reviewed and upgraded to assure continued compliance with 10CFR50.55a(f)(4).

3.4 PUMP REFERENCE LIST

This list gives a brief description of each pump identified in the Pump Inservice Test Program. The pump's ASME Code Classifications are specified in "PUMP INSERVICE TEST TABLES".

1-CH-P-1A
1-CH-P-1B
1-CH-P-1C

High Head Safety Injection or Charging Pumps provide high pressure flow for the Safety Injection System and during normal operation, maintain pressurizer level and seal water injection to the Reactor Coolant Pumps. See drawing 11448-CBM-88B, Sheet 2.

1-SI-P-1A
1-SI-P-1B

Low Head Safety Injection Pumps provides low pressure safety injection to the core for long term cooling and as a backup to accumulators. See drawing 11448-CBM-89A, Sheet 1.

1-CS-P-1A
1-CS-P-1B

Containment Spray Pumps provide a cooled, chemically treated, borated spray to reduce containment pressure following a loss of coolant accident. See drawing 11448-CBM-84A, Sheet 2.

1-RS-P-2A
1-RS-P-2B

Outside Recirculation Spray Pumps aid the Containment Spray System in reducing containment pressure rapidly following a loss of coolant accident. See drawing 11448-CBM-84B, Sheet 2.

1-RS-P-1A
1-RS-P-1B

Inside Recirculation Spray Pumps aid the containment spray system in reducing containment pressure rapidly following a loss of coolant accident. See drawing 11448-CBM-84B, Sheet 1.

1-FW-P-3A
1-FW-P-3B
1-FW-P-2

Auxiliary Feedwater Pumps supply the steam generator with feedwater in the event of a complete loss of normal feedwater. See drawing 11448-CBM-68A, Sheet 3.

1-RH-P-1A
1-RH-P-1B

The function of Residual Heat Removal Pumps is to remove heat energy from the core when the Reactor Coolant System is below 350°F. See drawing 11448-CBM-87A, Sheet 1.

1-CC-P-1A
1-CC-P-1B

Component Cooling Water Pumps are used to supply water to remove heat from the Residual Heat Removal System. See drawing 11448-CBM-72D, Sheet 1.

1-CH-P-2A
1-CH-P-2B

Boric Acid Transfer Pumps supply boric acid to suction of charging pumps via normal coolant boration and emergency makeup. See drawing 11448-CBM-88A, Sheet 1.

1-CC-P-2A
1-CC-P-2B

Charging Pump Cooling Water Pumps provide water to transfer heat from the charging pump mechanical seals. See drawing 11448-CBM-71B, Sheet 2.

1-SW-P-10A
1-SW-P-10B

Charging Pump Service Water Pumps provide cooling water for Charging Pump Cooling Water Systems. See drawing 11448-CBM-71B, Sheet 1.

1-SW-P-1A
1-SW-P-1B
1-SW-P-1C

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 DBA. See drawing 11448-CBM-71A, Sheet 1.

1-EE-P-1A
1-EE-P-1C
1-EE-P-1D
1-EE-P-1F

Fuel Oil Pumps supply fuel oil to emergency diesel generators wall mounted tank. See drawing 11448-CBB-38A, Sheet 2.

1-VS-P-1A
1-VS-P-1B
1-VS-P-1C

Main Control Room Air Conditioning System condenser side pumps provide service water to the main control room air conditioning system chillers. See drawing 11448-CBM-71D, Sheet 1.

1-VS-P-2A
1-VS-P-2B
1-VS-P-2C

Main Control Room Air Conditioning System chiller side pumps circulated chilled water to the main control room and switch gear room air handling units. See drawing 11448-FB-41A, Sheet 2.

3.5 PUMP INSERVICE TEST TABLES

This tabulation identifies the pumps to be tested, code classes, required test quantities and frequencies. Relief from test requirements is requested in cases where test requirements have been determined to be impractical. Where relief is requested, technical justification is provided along with alternative test methods when applicable.

For non-Code pumps, a request for relief is not necessary when provisions of the Code cannot be met. 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 cannot be 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 "tag" number which identifies the system to which the pump belongs.

2) Code 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.

3) System Resist - Either FIX for a test loop with a fixed system resistance or VAR for a test loop with a system resistance that can be varied.

4) The required Section XI test quantities of Inlet Pressure, Differential Pressure (Discharge Pressure is not a required test quantity but is listed for clarity), Flow Rate, Vibration, Pump Speed and Lubrication Level/Pressure are given as column headings. The following abbreviations are used to describe the test status:

Q - the test will be performed on a quarterly basis

CSD - the test will be performed every cold shutdown. A relief request explains the need for deviating from Section XI test frequency requirements

NA - the test is not applicable, see corresponding relief request

RR - the test will be performed every reactor refueling. A relief request explains the need for deviating from Section XI test frequency requirements.

2Y - the test will be performed every 24 months

Under pump speed, NA applies to constant speed pumps which do not require the measurement of speed. Therefore, no relief is necessary.

Under Lubrication Level/Pressure, NA applies to pumps that have a lubrication system with no level or pressure indication. No relief is necessary.

PUMP INSERVICE TEST TABLE

Pump Ident.	ASME Class	System Resist	Inlet Press	Disch Press	Diff Press	Flow Rate	Vibration	Pump Speed	Lubrication Level/Pressure	Relief Request
1-CH-P-1A	2	VAR	0	0	0	0	0	NA	0	1
1-CH-P-1B	2	VAR	0	0	0	0	0	NA	0	1
1-CH-P-1C	2	VAR	0	0	0	0	0	NA	0	1
1-SI-P-1A	2	FIX	0	0	0	0	0	NA	NA	1
1-SI-P-1B	2	FIX	0	0	0	0	0	NA	NA	1
1-CS-P-1A	2	FIX	0	0	0	0	0	NA	0	1
1-CS-P-1B	2	FIX	0	0	0	0	0	NA	0	1
1-RS-P-2A	2	FIX	2Y	2Y	2Y	2Y	2Y	NA	NA	1
1-RS-P-2B	2	FIX	2Y	2Y	2Y	2Y	2Y	NA	NA	1
1-RS-P-1A	2	VAR	RR	RR	RR	RR	RR	NA	NA	1
1-RS-P-1B	2	VAR	RR	RR	RR	RR	RR	NA	NA	1
1-FW-P-3A	3	VAR	0	0	0	0	0	NA	0	1
1-FW-P-3B	3	VAR	0	0	0	0	0	NA	0	1
1-FW-P-2	3	VAR	0	0	0	0	0	0	0	1
1-RH-P-1A	2	VAR	NA	NA	CSD	CSD	CSD	NA	NA	1,7
1-RH-P-1B	2	VAR	NA	NA	CSD	CSD	CSD	NA	NA	1,7

PUMP INSERVICE TEST TABLE

Pump Ident.	ASME Class	System Resist	Inlet Press	Disch Press	Diff Press	Flow Rate	Vibration	Pump Speed	Lubrication Level/Pressure	Relief Request
1-CC-P-1A	3	VAR	0	0	0	0	0	NA	0	1,19
1-CC-P-1B	3	VAR	0	0	0	0	0	NA	0	1,19
1-CH-P-2A	2	VAR	0	0	0	0	0	NA	NA	1,21
1-CH-P-2B	2	VAR	0	0	0	0	0	NA	NA	1,21
1-CC-P-2A	3	VAR	0	0	0	0	0	NA	NA	1
1-CC-P-2B	3	VAR	0	0	0	0	0	NA	NA	1
1-SW-P-10A	3	VAR	0	0	0	0	0	NA	NA	1
1-SW-P-10B	3	VAR	0	0	0	0	0	NA	NA	1
1-SW-P-1A	3	FIX	0	NA	0	0	0	0	0	1,11
1-SW-P-1B	3	FIX	0	NA	0	0	0	0	0	1,11
1-SW-P-1C	3	FIX	0	NA	0	0	0	0	0	1,11
1-EE-P-1A	NC	FIX	NA	0	NA	0	0	NA	NA	1,PNC-1
1-EE-P-1C	NC	FIX	NA	0	NA	0	0	NA	NA	1,PNC-1
1-EE-P-1D	NC	FIX	NA	0	NA	0	0	NA	NA	1,PNC-1
1-EE-P-1F	NC	FIX	NA	0	NA	0	0	NA	NA	1,PNC-1

Note: PNC-1 is not a request for relief but a description of alternative testing for non-Code pumps. Refer to Section 3.7.

PUMP INSERVICE TEST TABLE

Pump Ident.	ASME Class	System Resist	Inlet Press	Disch Press	Diff Press	Flow Rate	Vibration	Pump Speed	Lubrication Level/Pressure	Relief Request
1-VS-P-1A	3	VAR	NA	0	NA	NA	0	NA	NA	1,16
1-VS-P-1B	3	VAR	NA	0	NA	NA	0	NA	NA	1,16
1-VS-P-1C	3	VAR	NA	0	NA	NA	0	NA	NA	1,16
1-VS-P-2A	3	VAR	0	0	0	0	0	NA	NA	1,17
1-VS-P-2B	3	VAR	0	0	0	0	0	NA	NA	1,17
1-VS-P-2C	3	VAR	0	0	0	0	0	NA	NA	1,17

3.6 PUMP TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements which 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-0

Relief Request Withdrawn

RELIEF REQUEST P-1

Systems: Various

Pump(s): IWP Program Pumps. See PUMP INSERVICE TEST TABLE.

Class :

OM Part 6 Code Requirements
For Which Relief Is Requested

Section 4.3 Reference Values

Reference values shall 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 Request

Small reference values for vibration (V_r) will produce small acceptable ranges for pump operation. Based on a small acceptable range, an adequately and smoothly running pump could be subject to corrective action. To avoid this situation, a minimum value for V_r of 0.05 in/sec has been established for velocity measurements.

Alternate Testing Proposed

Pumps with a measured reference value below 0.05 in/sec shall have subsequent test results compared to an acceptable range based on 0.05 in/sec.

INTERIM RELIEF REQUEST P-2

Relief Request Withdrawn

RELIEF REQUEST P-3

Relief Request Withdrawn

RELIEF REQUEST P-4

Relief Request Withdrawn

RELIEF REQUEST P-5

Relief Request Withdrawn

RELIEF REQUEST P-6

Relief Request Withdrawn

RELIEF REQUEST P-7

System : Residual Heat Removal

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

Class : 2

OM Part 6 Code Requirements
For Which Relief Is Requested

Frequency of Pump Test.

Basis For Request

The low pressure RHR pumps take suction from and discharge to the reactor coolant system which operates nominally at 2235 psig. This is well above the operating pressure for the RHR pumps. Therefore, testing during normal operation is not possible.

Alternate Testing Proposed

Pumps will be tested each cold shutdown (but not more frequently than every three months).

RELIEF REQUEST P-8

Relief Request Withdrawn

INTERIM RELIEF REQUEST P-9

Relief Request Withdrawn

RELIEF REQUEST P-10

Relief Request Withdrawn

RELIEF REQUEST P-11

System : Service Water

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

Class : 3

OM Part 6 Code Requirements
For Which Relief Is Requested

OM Part 6, Paragraph 4.3 requires reference values to be points of operation readily duplicated during subsequent tests. All subsequent test results shall be compared to these initial reference values.

OM Part 6, Paragraph 4.6.2.2 requires that differential pressure across the pump be determined using either "a differential pressure transmitter that provides direct measurement of pressure difference or the difference between the pressure at a point in the inlet pipe and the pressure at a point in the discharge pipe."

Basis For Request

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 OM Part 6, Table 3b.

As stated above, the emergency service water pumps discharge into the intake canal. The end of the discharge pipe is above the level of the canal and the pressure at the end of the discharge pipe is always equal to the atmospheric pressure. Therefore, the total head and the corresponding flow will depend upon the tide level and will vary as the tide level varies. For purposes of testing, the system head is set by the tide level, and the

RELIEF REQUEST P-11 (Cont.)

corresponding measured flow will be compared to the acceptance criteria. Because the pressure at the end of the discharge piping is always equal to the atmospheric pressure and the flow varies as a function of tide level, there is no need to measure the discharge pressure at a point closer to the pump.

Also, OM Part 6, Paragraph 4.6.2.2 states that differential pressure can be determined by the difference between the pressure at a point in the inlet pipe and the pressure at a point in the discharge pipe. In the case of the emergency service water pumps, the end of the discharge pipe can be considered the "point in the discharge pipe" where the discharge pressure is determined (i.e., atmospheric pressure). The inlet pressure is dependent on the tide level. Although the discharge pressure will not be measured, the intent of Paragraph 4.6.2.2 is met and the test is equivalent to that described in Paragraph 4.6.2.2.

Alternate Testing Proposed

The flow is dependent upon tide level. 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 and the ranges given in OM Part 6, Table 3b. Discharge pressure will not be measured.

RELIEF REQUEST P-12

Relief Request Withdrawn

RELIEF REQUEST P-13

Relief Request Withdrawn

RELIEF REQUEST P-14

Relief Request Withdrawn

RELIEF REQUEST P-15

Relief Request Withdrawn

INTERIM RELIEF REQUEST P-16

System : Main Control Room Air Conditioning

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

Class : 3

OM Part 6 Code Requirements
For Which Interim Relief Is Requested

Measure flow, inlet pressure and differential pressure.

Basis For Interim Request

No flow or inlet pressure instrumentation is installed. According to Technical Specification Paragraph 3.23.C.1.b, "If one chiller becomes inoperable, return the inoperable chiller to operable status within seven (7) days or bring both units to Hot Shutdown within the next six (6) hours and be in Cold Shutdown within the following 30 hours." Because the main control and emergency switchgear room emergency ventilation system is common for both units, the above action statement applies whenever Unit 1 or Unit 2 is operating.

Given the scope of the required instrumentation modifications and the existing system configuration, it is estimated that installation of the appropriate flow and pressure instrumentation cannot be completed within the Technical Specification 7 day action statement. Two additional Main Control Room and Emergency Switchgear Room Air Conditioning System chillers are scheduled for installation by the end of 1993. The additional chillers will eliminate the need for entry into the Technical Specification action statement to install the instrumentation. Also, the flow elements for the chiller service water pumps cannot be installed at power. Therefore, installation of the additional instrumentation is scheduled to be completed by the end of the Unit 1 Cycle 12 refueling outage currently scheduled for second quarter of 1994.

Interim Alternate Testing Proposed

The control room chillers are monitored at least once every quarter for adequate performance. Part of this surveillance verifies that minimum service water flow requirements are being met by the pumps. A flow rate of 240 gpm is the minimum required

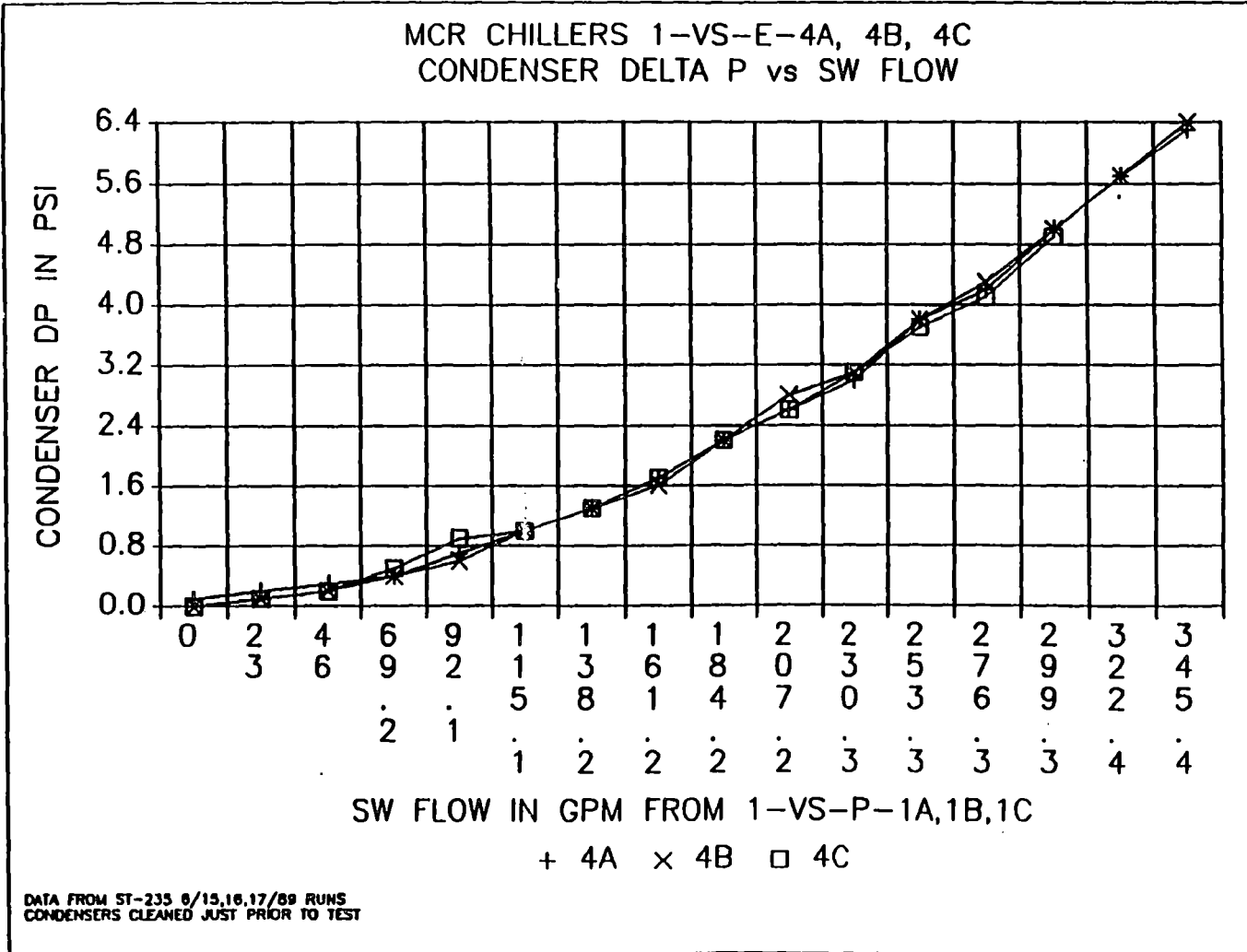
INTERIM RELIEF REQUEST P-16 (Cont.)

service water flow for condenser operability. The minimum flow is verified by measuring the differential pressure across the chiller condensers. The normal operating range is 4 to 7 psid across the chiller condensers. An alert value has been established at 10% above the minimum flow or 264 gpm. This flow equates to a differential pressure of 4 psid. If a differential pressure of at least 3.5 psid (240 gpm) cannot be achieved after any adjustments (i.e., adjusting the backwash valve and cleaning the service water pump Y-strainer) then the pump is declared inoperable.

When differential pressure exceeds 7 psid, the condenser tubes require cleaning. Also, if a pump discharge pressure of 30 psig cannot be achieved with a fully shut backwash isolation valve, then an investigation is initiated to check for possible upstream restriction or a degraded pump. Vibration monitoring has been added to the surveillance and will be performed at least once every quarter. The acceptance criteria for vibration are based upon the Section XI program.

The correlation between condenser differential pressure and flow was established during special tests that were conducted in June of 1989. The special tests consisted of fabricating a temporary instrumented loop of pipe with a straight run long enough to produce stable flow. The permanent piping has no straight runs that are long enough to measure flow. A section of permanent pipe was removed and the temporary section installed. The results of the tests are given in Figure 1 and Table 1.

Inlet pressure and flow instrumentation installation will be completed by the end of the Surry Unit 1 Cycle 12 refueling outage, currently scheduled for the second quarter of 1994. As the instrumentation is installed, inlet pressure, differential pressure, flow and vibration will be measured at least once every three months in accordance with ASME Section XI requirements.



FLOW VERSUS CONDENSER DIFFERENTIAL PRESSURE

FIGURE 1

INTERIM RELIEF REQUEST P-16 (Cont.)

INTERIM RELIEF REQUEST P-16 (Cont.)

TABLE 1

FLOW VERSUS CONDENSER DIFFERENTIAL PRESSURE

SPECIAL TEST ST-235 RUN 6/15 THRU 17/89
MCR CHILLERS 1-VS-E-4A, 4B, AND 4C

FLOW RATES		CONDENSER DP IN PSI		
FPS	GPM	E-4A	E-4B	E-4C
0.0	0.0	0.1	0.0	0.0
1.0	23.0	0.2	0.1	0.1
2.0	46.0	0.3	0.2	0.2
3.0	69.2	0.4	0.4	0.5
4.0	92.1	0.7	0.6	0.9
5.0	115.1	1.0	1.0	1.0
6.0	138.2	1.3	1.3	1.3
7.0	161.2	1.7	1.6	1.7
8.0	184.2	2.2	2.2	2.2
9.0	207.2	2.6	2.8	2.6
10.0	230.3	3.0	3.1	3.1
11.0	253.3	3.8	3.8	3.7
12.0	276.3	4.2	4.3	4.1
13.0	299.3	5.0	5.0	4.9
14.0	322.4	5.7	5.7	
15.0	345.4	6.3	6.4	

RELIEF REQUEST P-17

System : Main Control Room Air Conditioning

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

Class : 3

OM Part 6 Code Requirements
For Which Relief Is Requested

OM Part 6, Paragraph 4.3 requires reference values to be points of operation readily duplicated during subsequent tests. All subsequent test results shall be compared to these initial reference values.

Basis For Request

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. Test flow is controlled by throttling a gate valve near each air handling unit, which has proven to be a crude flow control method. 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

Two reference points of total flow versus differential pressure will be established from the reference test for each pump. A straight line approximation will be used to determine differential pressure reference points as a function of flow between the two test points. By keeping the difference between two test points small (a difference of 30 gpm compared to a nominal reference value of 270 gpm), the straight line is a good approximation of the pump curve within the two test points.

During the subsequent tests, flow will be throttled in each parallel path as close as practical to a reference flow value for that path. The total flow must fall between the two reference points used to establish the straight line approximation. The total flow and the corresponding differential pressure will be

RELIEF REQUEST P-17 (Cont.)

compared to either graphical and/or tabular acceptance criteria based on the straight line approximation of the reference pump curve.

For example, given the straight line equation determined from the two reference points for flow and differential pressure:

$$P_{rdiff} = a + b*Q \quad \text{where}$$

P_{rdiff} = the reference differential pressure based on the test value for flow (Q) recorded during subsequent tests and, a and b are constants,

the acceptance criteria for the flow (Q) would be as follows:

$$\begin{aligned} \text{Upper Required Action} &= 1.1 * P_{rdiff} \\ \text{Lower Required Action} &= 0.90 * P_{rdiff} \end{aligned}$$

The multipliers on P_{rdiff} are taken from OM Part 6, Table 3b. The actual recorded differential pressure (P_{adiff}) will then be compared to the acceptance criteria determined from P_{rdiff} . Also, the tests results can be trended from test to test by normalizing P_{adiff} to P_{rdiff} . For acceptable operation, the ratio of P_{adiff}/P_{rdiff} must fall between 0.9 and 1.1. A decrease in the ratio from test to test would indicate a steady degradation in pump performance.

INTERIM RELIEF REQUEST P-18

Relief Request Withdrawn

RELIEF REQUEST P-19

System : Component Cooling

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

Class : 3

OM Part 6 Code Requirements For Which Relief Is Requested

OM Part 6, Paragraph 4.3 requires reference values to be points of operation readily duplicated during subsequent tests. All subsequent test results shall be compared to these initial reference values.

Basis For Request

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

Two reference points of flow versus differential pressure will be established from the reference test for each pump. A straight line approximation will be used to determine differential pressure reference points as a function of flow between the two test points. By keeping the difference between two test points small, the straight line is a good approximation of the pump curve within the two test points.

During the subsequent tests, test flow will be throttled as close as practical to the reference flow value. The test flow must fall between the two reference points used to establish the straight line approximation. The test flow and the corresponding differential pressure will be compared to either graphical and/or tabular acceptance criteria based on the straight line approximation of the reference pump curve.

RELIEF REQUEST P-19 (Cont.)

For example, given the straight line equation determined from the two reference points for flow and differential pressure:

$$P_{rdiff} = a + b*Q \quad \text{where}$$

P_{rdiff} = the reference differential pressure based on the test value for flow (Q) recorded during subsequent tests and, a and b are constants,

the acceptance criteria for the flow (Q) would be as follows:

$$\begin{aligned} \text{Upper Required Action} &= 1.1 * P_{rdiff} \\ \text{Lower Required Action} &= 0.90 * P_{rdiff} \end{aligned}$$

The multipliers on P_{rdiff} are taken from Table 3b in OM Part 6. The actual recorded differential pressure (P_{adiff}) will then be compared to the acceptance criteria determined from P_{rdiff} . Also, the tests results can be trended from test to test by normalizing P_{adiff} to P_{rdiff} . For acceptable operation, the ratio of P_{adiff}/P_{rdiff} must fall between 0.9 and 1.1. A decrease in the ratio from test to test would indicate a steady degradation in pump performance.

RELIEF REQUEST P-20

Relief Request Withdrawn

RELIEF REQUEST P-21

System : Chemical and Volume Control

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

Class : 2

OM Part 6 Code Requirements
For Which Relief Is Requested

The pressure instrument accuracy shall be within $\pm 2\%$ (OM Part 6, Paragraph 4.6.1.1)

The full-scale range of each instrument shall be three times the reference value or less (OM Part 6, Paragraph 4.6.1.2).

Basis For Request

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

Also, 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 OM Part 6, Paragraph 4.6.1.2. 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 overrange 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.

RELIEF REQUEST P-21 (Cont.)

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.

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.

NON-CODE ALTERNATIVE TESTING PNC-1

System : Fuel Oil

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

Class : NC

OM Part 6 Code Requirements
Which Cannot Be Met

Measure test quantities after the pump has been running for at least two minutes (OM Part 6, Paragraph 5.6).

Basis For Alternate Testing

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 five 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 Section XI test data.

Alternate Testing

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

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Power Station Unit 1 is a Pressurized Water Reactor being operated in compliance with the ASME Boiler and Pressure Vessel Code. The Code requires periodic testing of certain safety related valves in order to verify their operability and physical integrity. The Surry Unit 1 Valve Inservice Test Program satisfies these requirements.

The program will detect potentially adverse changes in the mechanical condition of valves within the scope of Section XI, Subsection IWV of the Code. Subsection IWV, addenda through the 1988 Addenda and editions through the 1989 Edition, references Part 10, Edition OM-87, ASME/ANSI, Operation and Maintenance of Nuclear Power Plants, Addenda OMa-1988. Therefore, the Program is based on the requirements of Part 10, along with NRC Staff guidelines provided in Generic Letter 89-04 for complying with certain provisions of 10 CFR 50.55a(f).

This program includes valves "which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident." It is important to note that the scope of ASME Section XI and the Surry Inservice Testing Program for its implementation includes many valves which are not required to operate to meet FSAR license condition of hot shutdown nor limiting conditions in the plant Technical Specifications. In these cases, the requirements of Section XI, OM Part 10 shall be met except where relief has been granted.

To generate the Surry Unit 1 Valve Program, ASME Class 1, 2 and 3 valves were analyzed to determine their required type and frequency of testing. The valves to be tested under OM Part 10 commitments are listed by system and drawing in the Valve Test Tables.

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

- 1) 10CFR50, Appendix J for containment isolation valves and
- 2) OM Part 10 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 OM Part 10

requirements.

Valves subject to leak testing per Appendix J will be tested to the requirements of OM Part 10, Paragraphs 4.2.2.3(e) and 4.2.2.3(f) as required by 10 CFR 50.55a(b)(2)(vii). Appendix J satisfies the testing requirements of OM Part 10, Paragraph 4.2.2.2.

The Code recognizes that certain of its requirements may be impractical for a specific plant and contains provisions for requesting relief from impractical requirements.

The relief requests for the Valve Inservice Test Program identify testing impracticalities, provide technical basis for the request and propose alternate testing where warranted (refer to Section 4.5).

The Surry Unit 1 Valve Inservice Test Program complies with the intent of the applicable codes, regulations and guidelines and makes a positive contribution to the safe operation of the plant.

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.

Fail safe valves are tested by observing the valve operation upon loss of actuating power. In most cases, this can be accomplished using normal control circuits.

Those valves which are scheduled to be exercised during cold shutdown are subject to the requirements of OM Part 10, Paragraph 4.2.1.2(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 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 prior to plant startup. However, it is not the intent of this Part to keep the plant in cold shutdown in order to complete cold shutdown testing."

Valve Leakage Tests verify that valves are leak tight in accordance with Appendix J or ASME Section XI. Relief and Safety valves are required to be tested to the requirements of OM Part 1.

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. According to Generic Letter 89-04, disassembly and inspection of the check valves on a sampling basis is an acceptable alternative testing method.

As described in Generic Letter 89-04, the sample disassembly and inspection program involves grouping similar valves and testing one valve in each group during each refueling outage. The sampling technique requires that each valve in the group be the same design (manufacturer, size, model number, and materials of construction) and have the same service conditions including valve orientation. The group size cannot exceed four valves.

Additionally, at each disassembly it must be verified that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound. Also, to verify the full stroke capability of the valve, the disk should be manually exercised.

A different valve of each group is required to be disassembled, inspected, and manually full stroked exercised at each successive refueling outage, until the entire group has been tested. If the disassembled valve is not capable of being full stroked exercised or there is binding or failure of valve internals, the remaining valves in that group must be disassembled, inspected, and manually full stroked exercised during the same outage.

4.3 PROGRAM ADMINISTRATION

The operations and engineering staffs at Surry Power Station are responsible for administration and execution of the Valve Inservice Test Program. The program will be officially implemented on May 10, 1994. The program will be reviewed and upgraded to assure continued compliance with 10 CFR 50.55a(f)(4) for subsequent 120 month IST intervals.

4.4 VALVE INSERVICE TEST TABLES

The Valve Inservice Test Tables are the essence of the Valve Program to meet OM Part 10 requirements. The tables reflect the positions taken in support of the relief requests. To aid the reader in the interpretation of the tables, 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 cannot 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 cannot be met.

- 1) Valve Number - Each valve in the plant has a unique "tag" number which identifies the system to which the equipment belongs and type of equipment.
- 2) Drawing Location - The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.
- 3) Function - A brief description of the function of the valve.
- 4) 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 that are

classified ASME Class 1, 2 or 3.

- 5) Category - Categories are defined by OM Part 10, Section 1.4. Each valve has specific testing requirements which are determined by the category to which it belongs. Valves marked with an "E" are passive valves.
- 6) Size - Nominal pipe diameter to which valve connects is given in inches.
- 7) 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

- 8) 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 leakage testing.

PIV - Pressure Isolation Valve which 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.

- 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 - Closed
OC - Open and Closed

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

ST - Stroke times shall be measured per OM Part 10, Paragraph 4.2.1.4 or as modified by a specific relief request.

EV - Exercise valve for operability at least once every 3 months per OM Part 10, Paragraph 4.2.1.4 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by OM Part 10, Section 4.2.1.2.

LT - Leak test shall be performed per OM Part 10, Section 4.2.2 or as modified by specific relief request.

CV - Check valves shall be exercised at least once every 3 months per OM Part 10, Paragraph 4.3.2.1 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by OM Part 10, Section 4.2.2.2.

VP - Valve position indication shall be verified per OM Part 10, Paragraph 4.1 or as modified by a specific relief request.

SP - Set points of safety and relief valves shall be tested per OM Part 1 or as modified by a specific relief request.

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 OM Part 10, Paragraph 4.2.1.6 or as modified by a specific cold shutdown or reactor refueling justification which is allowed by OM Part 10, Section 4.2.1.2.

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1-BD-TV-100A	11448-CBM-124A	1 OF 4	C-7	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "A" STEAM GENERATOR BLOWDOWN, INSIDE CON- TAINMENT ISOLATION VALVE -----														
1-BD-TV-100B	11448-CBM-124A	1 OF 4	C-6	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "A" STEAM GENERATOR BLOWDOWN, OUTSIDE CON- TAINMENT ISOLATION VALVE -----														
1-BD-TV-100C	11448-CBM-124A	2 OF 4	C-7	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "B" STEAM GENERATOR BLOWDOWN, INSIDE CON- TAINMENT ISOLATION VALVE -----														
1-BD-TV-100D	11448-CBM-124A	2 OF 4	C-6	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "B" STEAM GENERATOR BLOWDOWN, OUTSIDE CON- TAINMENT ISOLATION VALVE -----														
1-BD-TV-100E	11448-CBM-124A	3 OF 4	C-7	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "C" STEAM GENERATOR BLOWDOWN, INSIDE CON- TAINMENT ISOLATION VALVE -----														
1-BD-TV-100F	11448-CBM-124A	3 OF 4	C-6	AO GATE	3.000	2	B		EV FS ST VP	C C C OC		21 21 21		
----- "C" STEAM GENERATOR BLOWDOWN, OUTSIDE CON- TAINMENT ISOLATION VALVE -----														

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1-CC-0001	11448-CBM-072A	2 OF 7	F-7	CHECK VALVE	6.000	3	C		CV	C		6		
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	6.000	3	C		CV	C		6		
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	6.000	3	C		CV	C		6		
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	18.000	3	C		CV	C O		5 5		
CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
1-CC-0177	11448-CBM-072A	1 OF 7	F-7	CHECK VALVE	18.000	3	C		CV	C O		5 5		
CC SUPPLY TO RHR HEAT EXCHANGER CHECK VALVE														
1-CC-0181	11448-CBM-072A	1 OF 7	A-6	MANUAL BFLY	18.000	3	B		EV	C O		26 26		
CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
1-CC-0185	11448-CBM-072A	1 OF 7	A-4	MANUAL BFLY	18.000	3	B		EV	C O		26 26		
CC RETURN FROM RHR HEAT EXCHANGER MANUAL ISOLATION VALVE														
1-CC-0224	11448-CBM-072B	2 OF 3	D-2	CHECK VALVE	6.000	3	C		CV	C		5		
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	6.000	3	C		CV	C		5		
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	6.000	3	C		CV	C		5		
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	18.000	3	C		CV	C O				
"A" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE														
1-CC-0563	11448-CBM-072D	1 OF 5	C-5	CHECK VALVE	18.000	3	C		CV	C				

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1-CC-0563	11448-CBM-072D	1 OF 5	C-5	CHECK VALVE	18.000	3	C		CV	O					
"B" COMPONENT COOLING PUMP DISCHARGE CHECK VALVE															
1-CC-0752	11448-CBM-071B	2 OF 2	C-3	CHECK VALVE	2.000	3	C		CV	C O					
CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE															
1-CC-0764	11448-CBM-071B	2 OF 2	C-7	CHECK VALVE	2.000	3	C		CV	C O					
CHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE															
1-CC-0805	11448-CBM-072C	4 OF 4	C-5	CHECK VALVE	1.000	3	C		CV	O		30			
CHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE															
1-CC-1105	11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			7		
COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE															
1-CC-1106	11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			7		
COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE															
1-CC-1107	11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			7		
COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE															
1-CC-1188	11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			7		
COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE															
1-CC-1189	11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			7		
COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE															
1-CC-1190	11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2.000	3	C		CV	C			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	1.000	3	B		EV	C O FS ST O			31 31 31 47 47		
CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE															

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1-CC-RV-112A	11448-CBM-072B	2 OF 3	C-7	RELIEF VALVE	.750	3	C		SP	0				
REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-112B	11448-CBM-072B	2 OF 3	C-5	RELIEF VALVE	.750	3	C		SP	0				
REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-112C	11448-CBM-072B	2 OF 3	C-4	RELIEF VALVE	.750	3	C		SP	0				
REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE														
1-CC-RV-119A	11448-CBM-072A	1 OF 7	E-3	RELIEF VALVE	1.500	3	C		SP	0				
"A" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
1-CC-RV-119B	11448-CBM-072A	1 OF 7	D-3	RELIEF VALVE	1.500	3	C		SP	0				
"B" RHR HEAT EXCHANGER COMPONENT COOLING RELIEF VALVE														
1-CC-RV-122	11448-CBM-072D	1 OF 5	F-6	RELIEF VALVE	3.000	3	C		SP	0				
COMPONENT COOLING SURGE TANK RELIEF														
1-CC-RV-123	11448-CBM-072D	1 OF 5	F-7	RELIEF VALVE	3.000	3	C		SP	0				
COMPONENT COOLING SURGE TANK VACUUM RELIEF														
1-CC-RV-124	11448-CBM-072A	5 OF 7	F-6	RELIEF VALVE	.750	3	C		SP	0				
COMPONENT COOLING PIPING RELIEF														
1-CC-RV-138A	11448-CBM-072A	2 OF 7	F-6	RELIEF VALVE	.750	3	C		SP	0				
REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-RV-138B	11448-CBM-072A	3 OF 7	F-6	RELIEF VALVE	.750	3	C		SP	0				
REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-RV-138C	11448-CBM-072A	4 OF 7	F-6	RELIEF VALVE	.750	3	C		SP	0				
REACTOR SHROULD COOLING COIL RELIEF VALVE														
1-CC-TV-105A	11448-CBM-072A	2 OF 7	B-4	AO BALL	6.000	3	B		EV FS ST VP	C C C OC			6 6 6	

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----- 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	6.000	3	B		EV FS ST VP	C C C OC		6 6 6		
----- 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	6.000	3	B		EV FS ST VP	C C C OC		6 6 6		
----- 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	18.000	3	B		EV FS ST VP	C O C C O OC				
----- 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	18.000	3	B		EV FS ST VP	C O C C O OC				
----- 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	6.000	3	B		EV FS ST VP	C C C OC				
----- 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	6.000	3	B		EV FS ST VP	C C C OC				
----- 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	6.000	3	B		EV FS ST VP	C C C OC				

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----- 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	1.500	3	B		EV ST VP	C C OC			27 27	
----- CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE -----														
1-CC-TV-120B	11448-CBM-072A	3 OF 7	C-5	AO GATE	1.500	3	B		EV ST VP	C C OC			27 27	
----- CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE -----														
1-CC-TV-120C	11448-CBM-072A	4 OF 7	C-5	AO GATE	1.500	3	B		EV ST VP	C C OC			27 27	
----- CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION VALVE -----														
1-CC-TV-140A	11448-CBM-072A	1 OF 7	D-7	AO GLOBE	3.000	3	B		EV FS ST VP	C C C OC			27 27 27	
----- 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	3.000	3	B		EV FS ST VP	C C C OC			27 27 27	
----- CC RETURN FROM REACTOR COOLANT PUMP THERMAL BARRIERS, OUTSIDE CONTAINMENT ISOLATION VALVE -----														

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1-CH-076	11448-CBM-088A	1 OF 4	C-7	CHECK VALVE	2.000	2	C		CV	0				
"A" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
1-CH-092	11448-CBM-088A	1 OF 4	C-6	CHECK VALVE	2.000	2	C		CV	0				
"B" BORIC ACID TRANSFER PUMP DISCHARGE CHECK VALVE														
1-CH-225	11448-CBM-088B	1 OF 3	C-3	CHECK VALVE	1.000	2	C		CV	0		19		
MANUAL EMERGENCY BORATION PATH CHECK VALVE														
1-CH-227	11448-CBM-088B	2 OF 3	A-3	CHECK VALVE	2.000	2	C		CV	0		19		
MAIN EMERGENCY BORATION LINE TO CHARGING PUMP SUCTION CHECK VALVE														
1-CH-228	11448-CBM-088B	1 OF 3	B-4	MANUAL GATE	1.000	2	B		EV	0		19		
MANUAL EMERGENCY PATH BORATION MANUAL VALVE														
1-CH-229	11448-CBM-088B	2 OF 3	A-4	CHECK VALVE	1.000	2	C		CV	0		19		
MANUAL EMERGENCY BORATION PATH CHECK VALVE, CHARGING PUMP SUCTION CHECK VALVE														
1-CH-230	11448-CBM-088B	1 OF 3	B-6	CHECK VALVE	4.000	2	AC		CV	C O C			8	
CHARGING PUMP SUPPLY FROM VOLUME CONTROL TANK DISCHARGE CHECK VALVE														
1-CH-256	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	2.000	2	C		CV	0				
"A" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-258	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	3.000	2	C		CV	C O			1	
"A" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-265	11448-CBM-088B	2 OF 3	D-6	CHECK VALVE	2.000	2	C		CV	0				
"B" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-267	11448-CBM-088B	2 OF 3	D-6	CHECK VALVE	3.000	2	C		CV	C O			1	
"B" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-274	11448-CBM-088B	2 OF 3	D-4	CHECK VALVE	2.000	2	C		CV	0				

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"C" CHARGING PUMP DISCHARGE RECIRC LINE CHECK VALVE														
1-CH-276	11448-CBM-088B	2 OF 3	D-4	CHECK VALVE	3.000	2	C		CV	C			1	
"C" CHARGING PUMP DISCHARGE CHECK VALVE														
1-CH-309	11448-CBM-088C	1 OF 2	D-4	CHECK VALVE	3.000	2	AC	CIV	CV LT	C C			6	
MAIN CHARGING SUPPLY HEADER, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-CH-FCV-1113A	11448-CBM-088B	1 OF 3	C-3	AO GLOBE	1.000	2	B		EV FS ST VP	O O O OC				
MANUAL EMERGENCY BORATION PATH FLOW CONTROL VALVE														
1-CH-FCV-1114A	11448-CBM-088B	1 OF 3	C-4	AO GLOBE	2.000	2	B		EV FS ST VP	C C C OC				
PRIMARY GRADE WATER SUPPLY TO BORIC ACID BLENDER ISOLATION VALVE														
1-CH-FCV-1160	11448-CBM-088C	1 OF 2	B-4	AO GLOBE	2.000	1	AE	CIV	LT VP	C OC				
CHARGING FLOW CONTROL TO LOOP FILL HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CH-LCV-1115B	11448-CBM-088B	2 OF 3	B-8	MO GATE	8.000	2	A		EV LT ST VP	C O C O OC				
CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK														
1-CH-LCV-1115C	11448-CBM-088B	1 OF 3	C-6	MO GATE	4.000	2	B		EV ST VP	C C OC		11 11		
CHARGING PUMP SUPPLY ISOLATION FROM VOLUME CONTROL TANK														
1-CH-LCV-1115D	11448-CBM-088B	2 OF 3	C-8	MO GATE	8.000	2	A		EV LT ST VP	C O C O OC				

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----- CHARGING PUMP SUPPLY ISOLATION VALVE FROM REFUELING WATER STORAGE TANK -----														
1-CH-LCV-1115E	11448-CBM-088B	1 OF 3	C-6	MO GATE	4.000	2	B		EV ST VP	C C OC		11 11		
----- CHARGING PUMP SUPPLY ISOLATION VALVE FROM VOLUME CONTROL TANK -----														
1-CH-LCV-1460A	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2.000	1	B		EV FS ST VP	C C C OC		15 15 15		
----- NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION VALVE -----														
1-CH-LCV-1460B	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2.000	1	B		EV FS ST VP	C C C OC		15 15 15		
----- NORMAL LETDOWN TO REGENERATIVE HEAT EXCHANGER ISOLATION VALVE -----														
1-CH-MOV-1267A	11448-CBM-088B	2 OF 3	C-7	MO GATE	6.000	2	E		VP	OC				
----- 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	6.000	2	E		VP	OC				
----- LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE -----														
1-CH-MOV-1269A	11448-CBM-088B	2 OF 3	C-5	MO GATE	6.000	2	E		VP	OC				
----- 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	6.000	2	E		VP	OC				
----- LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE -----														
1-CH-MOV-1270A	11448-CBM-088B	2 OF 3	C-3	MO GATE	6.000	2	E		VP	OC				
----- 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	6.000	2	E		VP	OC				
----- LOW HEAD SI PUMP TO CHARGING PUMP SUCTION ISOLATION VALVE -----														
1-CH-MOV-1275A	11448-CBM-088B	2 OF 3	D-7	MO GATE	2.000	2	B		EV ST	C O C O				

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VCN-
1-CH-MOV-1275A	11448-CBM-088B	2 OF 3	D-7	MO GATE	2.000	2	B		VP	OC				
----- "A" CHARGING PUMP MINIMUM RECIRCULATION ISO- LATION VALVE -----														
1-CH-MOV-1275B	11448-CBM-088B	2 OF 3	D-5	MO GATE	2.000	2	B		EV ST VP	C O C O OC				
----- "B" CHARGING PUMP MINIMUM RECIRCULATION ISO- LATION VALVE -----														
1-CH-MOV-1275C	11448-CBM-088B	2 OF 3	D-3	MO GATE	2.000	2	B		EV ST VP	C O C O OC				
----- "C" CHARGING PUMP MINIMUM RECIRCULATION ISO- LATION VALVE -----														
1-CH-MOV-1286A	11448-CBM-088B	2 OF 3	E-7	MO GATE	3.000	2	B		EV ST VP	C O C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1286B	11448-CBM-088B	2 OF 3	E-6	MO GATE	3.000	2	B		EV ST VP	C O C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1286C	11448-CBM-088B	2 OF 3	E-4	MO GATE	3.000	2	B		EV ST VP	C O C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1287A	11448-CBM-088B	2 OF 3	D-7	MO GATE	3.000	2	B		EV ST VP	C O C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1287B	11448-CBM-088B	2 OF 3	D-6	MO GATE	3.000	2	B		EV	C O				

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISO IIV CAT	VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	RR JUST RRV-	ALT TEST VCN-
1-CH-MOV-1287B	11448-CBM-088B	2 OF 3	D-6	MO GATE	3.000	2	B		ST	C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1287C	11448-CBM-088B	2 OF 3	D-4	MO GATE	3.000	2	B		EV ST VP	C O C O OC				
----- CHARGING PUMP MAIN DISCHARGE ISOLATION VALVE -----														
1-CH-MOV-1289A	11448-CBM-088C	1 OF 2	B-4	MO GATE	3.000	2	A	CIV	EV LT ST VP	C C C OC		16		
----- MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-CH-MOV-1289B	11448-CBM-088C	1 OF 2	B-3	MO GATE	3.000	2	B		EV ST VP	C C OC		16	16	
----- MAIN CHARGING HEADER ISOLATION VALVE, OUTSIDE CONTAINMENT -----														
1-CH-MOV-1350	11448-CBM-088B	1 OF 3	B-5	MO GATE	2.000	2	B		EV ST VP	O O OC		19	19	
----- EMERGENCY BORATION TO CHARGING PUMP SUCTION -----														
1-CH-MOV-1373	11448-CBM-088B	2 OF 3	E-7	MO GATE	3.000	2	E		VP	OC				
----- CHARGING PUMP RECIRCULATION HEADER ISOLATION VALVE -----														
1-CH-MOV-1381	11448-CBM-088B	1 OF 3	C-8	MO GATE	3.000	2	A	CIV	EV LT ST VP	C C C OC		13	13	
----- REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-CH-RV-1203	11448-CBM-088C	1 OF 2	F-4	RELIEF VALVE	2.000	2	C		SP	O				
----- 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	2.000	2	C		SP	O				
----- REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARGE TO PRESSURIZER RELIEF TANK -----														

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1-CH-RV-1382B	11448-CBM-088B	1 OF 3	C-7	RELIEF VALVE	2.000	2	C		SP	O				
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	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC		15 15 15		
LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE														
1-CH-TV-1204B	11448-CBM-088A	4 OF 4	D-3	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC		15 15 15		
LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT ISOLATION VALVE														

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1-CS-013	11448-CBM-084A	2 OF 3	F-4	CHECK VALVE	8.000	2	AC	CIV	CV	C	43			
									LT	C	43			
----- "A" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE -----														
1-CS-024	11448-CBM-084A	2 OF 3	E-4	CHECK VALVE	8.000	2	AC	CIV	CV	C	43			
									LT	C	43			
----- "B" CONT SPRAY PUMP INSIDE CONTAINMENT ISOLATION DISCHARGE CHECK VALVE -----														
1-CS-105	11448-CBM-084A	2 OF 3	F-3	CHECK VALVE	8.000	2	C		CV	C	43			
										O	43			
----- CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE -----														
1-CS-127	11448-CBM-084A	2 OF 3	E-3	CHECK VALVE	8.000	2	C		CV	C	43			
										O	43			
----- CONTAINMENT SPRAY PUMP DISCHARGE CHECK VALVE -----														
1-CS-MOV-100A	11448-CBM-084A	2 OF 3	B-7	NO GATE	12.000	2	B		EV	O				
									ST	O				
									VP	OC				
----- CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE -----														
1-CS-MOV-100B	11448-CBM-084A	2 OF 3	A-7	NO GATE	12.000	2	B		EV	O				
									ST	O				
									VP	OC				
----- CONTAINMENT SPRAY PUMP SUCTION ISOLATION VALVE -----														
1-CS-MOV-101A	11448-CBM-084A	2 OF 3	F-5	NO GATE	8.000	2	A	CIV	EV	C				
									LT	C				
									ST	C				
									VP	OC				
----- "A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-CS-MOV-101B	11448-CBM-084A	2 OF 3	F-5	NO GATE	8.000	2	A	CIV	EV	C				
									LT	C				
									ST	C				
									VP	OC				
----- "A" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-CS-MOV-101C	11448-CBM-084A	2 OF 3	E-5	NO GATE	8.000	2	A	CIV	EV	C				

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1-CS-MOV-101C	11448-CBM-084A	2 OF 3	E-5	NO GATE	8.000	2	A	CIV	EV LT ST VP	O C C O OC					

"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-CS-MOV-101D	11448-CBM-084A	2 OF 3	E-5	NO GATE	8.000	2	A	CIV	EV LT ST VP	C O C C O OC					

"B" CONT SPRAY PUMP DISCHARGE ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-CS-MOV-102A	11448-CBM-084A	3 OF 3	C-6	NO GATE	6.000	2	B		EV ST VP	O O OC					

CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE															
1-CS-MOV-102B	11448-CBM-084A	3 OF 3	B-6	NO GATE	6.000	2	B		EV ST VP	O O OC					

CHEMICAL ADDITION TANK DISCHARGE TO RWST ISOLATION VALVE															

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1-CV-002	11448-CBM-085A	1 OF 2	D-4	MAN GATE	8.000	2	AE	CIV	LT	C				
CONTAINMENT VACUUM EJECTOR SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-CV-HCV-100	11448-CBM-085A	1 OF 2	D-3	AO GATE	8.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT VACUUM EJECTOR, INSIDE CONTAINMENT ISOLATION VALVE														
1-CV-TV-150A	11448-CBM-085A	2 OF 2	E-4	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
"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	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
"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	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
"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	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
"B" CONTAINMENT VACUUM PUMP SUCTION ISOLATION VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														

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1-CW-MOV-100A	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96.000	NC	B		EV ST VP	C C OC					
----- CONDENSER DISCHARGE ISOLATION VALVE															
1-CW-MOV-100B	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96.000	NC	B		EV ST VP	C C OC					
----- CONDENSER DISCAHRGE ISOLATION VALVE															
1-CW-MOV-100C	11448-CBM-071A	2 OF 4	F-6	MO BFLY	96.000	NC	B		EV ST VP	C C OC					
----- CONDENSER DISCHARGE ISOLATION VALVE															
1-CW-MOV-100D	11448-CBM-071A	2 OF 4	F-5	MO BFLY	96.000	NC	B		EV ST VP	C C OC					
----- CONDENSER DISCHARGE ISOLATION VALVE															
1-CW-MOV-106A	11448-CBM-071A	2 OF 4	D-7	MO BFLY	96.000	3	B		EV ST VP	C C OC					
----- CONDENSER INLET ISOLATION VALVE															
1-CW-MOV-106B	11448-CBM-071A	2 OF 4	D-7	MO BFLY	96.000	3	B		EV ST VP	C C OC					
----- CONDENSER INLET ISOLATION VALVE															
1-CW-MOV-106C	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96.000	3	B		EV ST VP	C C OC					
----- CONDENSER INLET ISOLATION VALVE															
1-CW-MOV-106D	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96.000	3	B		EV ST VP	C C OC					
----- CONDENSER INLET ISOLATION VALVE															

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL V-	CS JUST	RR RRV-	NC ALT TEST
1-DA-TV-100A	11448-CBM-083B	3 OF 3	B-3	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-DA-TV-100B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- REACTOR CONTAINMENT SUMP PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE -----														
1-DA-TV-103A	11448-CBM-083A	2 OF 3	E-7	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-DA-TV-103B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- POST ACCIDENT SAMPLE SYSTEM RETURN, OUTSIDE CONTAINMENT TRIP VALVE -----														

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1-DG-TV-108A	11448-CBM-083B	1 OF 3	B-2	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				

PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, INSIDE CONTAINMENT ISOLATION VALVE														
1-DG-TV-108B	11448-CBM-083A	1 OF 3	C-7	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				

PRIMARY DRAIN TRANSFER PUMPS DISCHARGE, OUT- SIDE CONTAINMENT ISOLATION VALVE														

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1-EE-015	11448-FB -038A	2 OF 3	B-7	CHECK VALVE	1.500	NC	C		CV	0				
DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK VALVE														
1-EE-019	11448-FB -038A	2 OF 3	F-7	CHECK VALVE	1.500	NC	C		CV	0				
DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK VALVE														
1-EE-028	11448-FB -038A	2 OF 3	F-6	CHECK VALVE	1.500	NC	C		CV	0				
DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK VALVE														
1-EE-035	11448-FB -038A	2 OF 3	B-6	CHECK VALVE	1.500	NC	C		CV	0				
DIESEL EMERGENCY GENERATOR FUEL OIL PUMP DISCHARGE CHECK VALVE														
1-EE-RV-103	11448-FB -038A	1 OF 3	C-7	RELIEF VALVE	.500	NC	C		SP	0				
DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE VALVE, RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-105	11448-FB -038A	1 OF 3	F-7	RELIEF VALVE	.500	NC	C		SP	0				
DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE														
1-EE-RV-106	11448-FB -038A	1 OF 3	C-6	RELIEF VALVE	.500	NC	C		SP	0				
DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE VALVE, RV DISCHARGE TO PUMP SUCTION														
1-EE-RV-108	11448-FB -038A	1 OF 3	E-6	RELIEF VALVE	.500	NC	C		SP	0				
DIESEL FUEL OIL PUMP DISCHARGE RELIEF VALVE														
1-EE-SOV-100	11448-FB -038A	2 OF 3	C-4	SO GATE	1.000	NC	B		EV ST	0 0			4	
DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-101	11448-FB -038A	2 OF 3	B-4	SO GATE	1.000	NC	B		EV ST	0 0			4	
DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-104	11448-FB -038A	2 OF 3	F-4	SO GATE	1.000	NC	B		EV ST	0 0			4	
DIESEL FUEL OIL PUMP DISCHARGE VALVE														
1-EE-SOV-105	11448-FB -038A	2 OF 3	F-4	SO GATE	1.000	NC	B		EV ST	0 0			4	

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DIESEL FUEL OIL PUMP DISCHARGE VALVE															

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1-EG-040	11448-FB -046A	1 OF 3	B-8	CHECK VALVE	.750	NC	AC		CV LT	C C					
----- DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE -----															
1-EG-042	11448-FB -046A	1 OF 3	B-4	CHECK VALVE	.750	NC	AC		CV LT	C C					
----- DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE -----															
1-EG-043	11448-FB -046A	1 OF 3	E-7	AIR PILOT		NC	B		EV ST	O O				3	
----- EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE -----															
1-EG-044	11448-FB -046A	1 OF 3	E-3	AIR PILOT		NC	B		EV ST	O O				3	
----- EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE -----															
1-EG-045	11448-FB -046A	1 OF 3	E-7	CHECK VALVE		NC	C		CV	C O				3 3	
----- EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE -----															
1-EG-046	11448-FB -046A	1 OF 3	E-4	CHECK VALVE		NC	C		CV	C O				3 3	
----- EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE -----															
1-EG-SOV-100A	11448-FB -046A	1 OF 3	E-7	SO GATE	1.000	NC	B		EV ST	C C O				3 3	
----- DIESEL AIR START SYSTEM SOLENOID VALVE -----															
1-EG-SOV-100B	11448-FB -046A	1 OF 3	E-4	SO GATE	1.000	NC	B		EV ST	C C O				3 3	
----- DIESEL AIR START SYSTEM SOLENOID VALVE -----															
3-EG-040	11448-FB -046C	1 OF 3	B-8	CHECK VALVE	.750	NC	AC		CV LT	C C					
----- DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE -----															
3-EG-042	11448-FB -046C	1 OF 3	B-4	CHECK VALVE	.750	NC	AC		CV LT	C C					

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DIESEL GENERATOR COMPRESSOR DISCHARGE CHECK VALVE															
3-EG-043	11448-FB -046C	1 OF 3	E-7	AIR PILOT		NC	B		EV ST	O O					3
EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE															
3-EG-044	11448-FB -046C	1 OF 3	E-3	AIR PILOT		NC	B		EV ST	O O					3
EMERGENCY DIESEL GENERATOR STARTING AIR/DRIVE AIR CONTROL/RELAY VALVE															
3-EG-045	11448-FB -046C	1 OF 3	E-7	CHECK VALVE		NC	C		CV	C O					3 3
EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE															
3-EG-046	11448-FB -046C	1 OF 3	E-4	CHECK VALVE		NC	C		CV	C O					3 3
EMERGENCY DIESEL GENERATOR START PRESSURE EQUALIZING CHECK VALVE															
3-EG-SOV-300A	11448-FB -046C	1 OF 3	E-7	SO GATE	1.000	NC	B		EV ST	C O C O					3 3
DIESEL AIR START SYSTEM SOLENOID VALVE															
3-EG-SOV-300B	11448-FB -046C	1 OF 3	E-4	SO GATE	1.000	NC	B		EV ST	C O C O					3 3
DIESEL AIR START SYSTEM SOLENOID VALVE															

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1-FP-151	11448-CBB-047B	1	OF 3 D-6	MAN BALL	4.000	2	AE	CIV	LT	C				

FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-FP-152	11448-CBB-047B	1	OF 3 E-6	MAN BALL	4.000	2	AE	CIV	LT	C				

FIRE PROTECTION SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE														

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	RR JUST RRV-	ALT TEST VCN-
1-FW-010	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	14.000	2	C		CV	C	5			
"A" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-027	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	3.000	2	C		CV	O	4			
"A" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-041	11448-CBM-068A	1 OF 4	D-6	CHECK VALVE	14.000	2	C		CV	C	5			
"B" MAIN FEEDWATER HEADER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-058	11448-CBM-068A	1 OF 4	C-6	CHECK VALVE	3.000	2	C		CV	O	4			
"B" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-072	11448-CBM-068A	1 OF 4	C-6	CHECK VALVE	14.000	2	C		CV	C	5			
"C" MAIN FEEDWATER SUPPLY, INSIDE CONTAINMENT PENETRATION CHECK VALVE														
1-FW-089	11448-CBM-068A	1 OF 4	B-7	CHECK VALVE	3.000	2	C		CV	O	4			
"C" AUXILIARY FEEDWATER HEADER CHECK VALVE AT MAIN FEEDWATER HEADER														
1-FW-131	11448-CBM-068A	1 OF 4	B-4	CHECK VALVE	6.000	2	C		CV	O	4			
AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
1-FW-133	11448-CBM-068A	1 OF 4	B-4	CHECK VALVE	6.000	2	C		CV	O	4			
AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
1-FW-136	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6.000	2	C		CV	O	4			
AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - INSIDE														
1-FW-138	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6.000	2	C		CV	O	4			
AUXILIARY FEEDWATER HEADER CHECK VALVE AT CONTAINMENT PENETRATION - OUTSIDE														
1-FW-142	11448-CBM-068A	3 OF 4	D-8	CHECK VALVE	6.000	3	C		CV	C O	4 4			
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK VALVE														
1-FW-144	11448-CBM-068A	3 OF 4	D-7	CHECK VALVE	1.000	3	C		CV	O	41			
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														

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1-FW-148	11448-CBM-068A	3 OF 4	E-7	CHECK VALVE	1.000	3	C		CV	O	41				
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
1-FW-157	11448-CBM-068A	3 OF 4	D-6	CHECK VALVE	6.000	3	C		CV	C	4				
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK VALVE														
1-FW-159	11448-CBM-068A	3 OF 4	D-6	CHECK VALVE	1.000	3	C		CV	O	41				
	"A" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
1-FW-163	11448-CBM-068A	3 OF 4	E-6	CHECK VALVE	1.000	3	C		CV	O	41				
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
1-FW-172	11448-CBM-068A	3 OF 4	D-5	CHECK VALVE	6.000	3	C		CV	C	4				
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP DISCHARGE CHECK VALVE														
1-FW-174	11448-CBM-068A	3 OF 4	D-5	CHECK VALVE	1.000	3	C		CV	O	41				
	"B" MOTOR DRIVEN AUXILIARY FEEDWATER PUMP RECIRC LINE CHECK VALVE														
1-FW-178	11448-CBM-068A	3 OF 4	E-4	CHECK VALVE	1.000	3	C		CV	O	41				
	AUXILIARY FEEDWATER TO PUMP OIL COOLER CHECK VALVE														
1-FW-272	11448-CBM-068A	1 OF 4	A-8	CHECK VALVE	6.000	2	C		CV	O	4				
	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	6.000	2	C		CV	O	4				
	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	6.000	2	C		CV	O	4				
	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	6.000	2	C		CV	O	4				
	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	14.000	NC	B		EV FS ST VP	C C C OC	28 28 28				

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----- MAIN FEEDWATER REGULATING VALVE -----														
1-FW-FCV-1488	11448-CBM-068A	1 OF 4	D-5	AO GATE	14.000	NC	B		EV FS ST VP	C C C OC		28 28 28		
----- MAIN FEEDWATER REGULATING VALVE -----														
1-FW-FCV-1498	11448-CBM-068A	1 OF 4	B-5	AO GATE	14.000	NC	B		EV FS ST VP	C C C OC		28 28 28		
----- MAIN FEEDWATER REGULATING VALVE -----														
1-FW-HCV-155A	11448-CBM-068A	1 OF 4	F-3	AO GATE	4.000	NC	B		EV FS ST VP	C C C OC		28 28 28		
----- MAIN FEEDWATER REGULATING VALVE BYPASS VALVE -----														
1-FW-HCV-155B	11448-CBM-068A	1 OF 4	D-3	AO GATE	4.000	NC	B		EV FS ST VP	C C C OC		28 28 28		
----- MAIN FEEDWATER REGULATING VALVE BYPASS VALVE -----														
1-FW-HCV-155C	11448-CBM-068A	1 OF 4	C-3	AO GATE	4.000	NC	B		EV FS ST VP	C C C OC		28 28 28		
----- MAIN FEEDWATER REGULATING VALVE BYPASS VALVE -----														
1-FW-MOV-151A	11448-CBM-068A	1 OF 4	B-7	MO GLOBE	3.000	2	B		EV ST VP	C O C O OC				
----- NORMAL AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR -----														
1-FW-MOV-151B	11448-CBM-068A	1 OF 4	B-7	MO GLOBE	3.000	2	B		EV ST VP	C O C O OC				

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----- STANDBY AUXILIARY FEEDWATER SUPPLY TO "C" STEAM GENERATOR -----															
1-FW-MOV-151C	11448-CBM-068A	1 OF 4	B-6	NO GLOBE	3.000	2	B		EV ST VP	C O C O OC					
----- STANDBY AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR -----															
1-FW-MOV-151D	11448-CBM-068A	1 OF 4	B-6	NO GLOBE	3.000	2	B		EV ST VP	C O C O OC					
----- NORMAL AUXILIARY FEEDWATER SUPPLY TO "B" STEAM GENERATOR -----															
1-FW-MOV-151E	11448-CBM-068A	1 OF 4	B-6	NO GLOBE	3.000	2	B		EV ST VP	C O C O OC					
----- STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR -----															
1-FW-MOV-151F	11448-CBM-068A	1 OF 4	B-5	NO GLOBE	3.000	2	B		EV ST VP	C O C O OC					
----- STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR -----															
1-FW-MOV-160A	11548-CBM-068A	3 OF 4	F-7	NO GLOBE	6.000	3	B		EV ST VP	O O OC					
----- CROSS - CONNECT FOR UNIT 1 AUXILIARY FEED- WATER FROM UNIT 2 -----															
1-FW-MOV-160B	11548-CBM-068A	3 OF 4	F-7	NO GLOBE	6.000	3	B		EV ST VP	O O OC					
----- CROSS - CONNECT FOR UNIT 1 AUXILIARY FEED- WATER FROM UNIT 2 -----															

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1-GW-TV-100	11448-CBM-090C	1 OF 1	C-6	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1 -----														
1-GW-TV-101	11448-CBM-090C	1 OF 1	C-6	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUCTION LINE TO HYDROGEN ANALYZER - UNIT 1 -----														
1-GW-TV-102	11448-CBM-090C	1 OF 1	A-7	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1 -----														
1-GW-TV-103	11448-CBM-090C	1 OF 1	A-7	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- DISCHARGE LINE TO HYDROGEN ANALYZER - UNIT 1 -----														
1-GW-TV-104	11448-CBM-090C	1 OF 1	E-6	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-GW-TV-105	11448-CBM-090C	1 OF 1	E-6	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUPPLY TO UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-GW-TV-106	11448-CBM-090C	1 OF 1	D-7	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC				

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL V-	CS JUST	RR RRV-	ALT TEST	NC VCN-
RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-GW-TV-107	11448-CBM-090C	1 OF 1	D-7	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
RETURN FROM UNIT 2 HYDROGEN ANALYZER, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-GW-TV-111A	11448-CBM-090C	1 OF 1	F-8	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
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	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
UNIT 1 SAMPLE LINE TO AIR SAMPLE PANEL, OUTSIDE CONTAINMENT ISOLATION VALVE															

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	IWV CAT	ISO VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VCN-
1-IA-446	11448-CBM-075C	1 OF 5	D-8	MAN GATE	2.000	2	AE	CIV	LT	C				

BACKUP INSTRUMENT AIR TO CONTAINMENT														

1-IA-704	11548-CBM-075B	2 OF 2	C-3	MAN GATE	2.000	2	AE	CIV	LT	C				

BACKUP INSTRUMENT AIR TO CONTAINMENT														

1-IA-928	11448-FM -075E	1 OF 1	A-2	CHECK VALVE	.750	NC	AC		CV LT	C C				1

BOTTLED AIR SUPPLY TO 1-RC-PCV-1456 ISOLATION CHECK VALVE														

1-IA-938	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2.000	2	AC	CIV	CV LT	C C			6	

INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														

1-IA-939	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2.000	2	AC	CIV	CV LT	C C			6	

INSTRUMENT AIR SUPPLY TO CONTAINMENT, INSIDE CONTAINMENT ISOLATION CHECK VALVE														

1-IA-947	11448-CBM-075C	3 OF 5	D-4	CHECK VALVE	.500	NC	AC		CV LT	C C				1

BOTTLED AIR SUPPLY TO 1-MS-SOV-102A,B ISOLATION CHECK VALVE														

1-IA-948	11448-CBM-075C	3 OF 5	D-4	CHECK VALVE	.500	NC	C		CV	O				1

BOTTLED AIR SUPPLY TO 1-MS-SOV-102A,B SUPPLY CHECK VALVE														

1-IA-949	11448-FM -075E	1 OF 1	A-2	CHECK VALVE	.750	NC	C		CV	O				1

BOTTLED AIR SUPPLY TO 1-RC-PCV-1456 SUPPLY CHECK VALVE														

1-IA-952	11448-FM -075E	1 OF 1	C-2	CHECK VALVE	.750	NC	AC		CV LT	C C				1

BOTTLED AIR SUPPLY TO 1-RC-PCV-1455C ISOLATION CHECK VALVE														

1-IA-953	11448-FM -075E	1 OF 1	D-2	CHECK VALVE	.750	NC	C		CV	O				1

BOTTLED AIR SUPPLY TO 1-RC-PCV-1455C SUPPLY CHECK VALVE														

1-IA-RV-114	11448-FM -075E	1 OF 1	B-4	RELIEF VALVE		NC	C		SP	O				

BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE														

1-IA-RV-115	11448-FM -075E	1 OF 1	B-3	RELIEF VALVE		NC	C		SP	O				

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----- BOTTLED AIR SUPPLY TO PORV'S RELIEF VALVE -----														
1-IA-TV-100	11448-CBM-075C	1 OF 5	E-8	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- INSTRUMENT AIR SUPPLY TO CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-IA-TV-101A	11448-CBM-075J	1 OF 1	A-3	AO GATE	3.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- INSTRUMENT AIR SUCTION FROM CONTAINMENT -----														
1-IA-TV-101B	11448-CBM-075J	1 OF 1	A-3	AO GATE	3.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- INSTRUMENT AIR SUCTION FROM CONTAINMENT -----														

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1-LM-TV-100A	11448-CBM-085A	1 OF 2	B-6	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100B	11448-CBM-085A	1 OF 2	B-6	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100C	11448-CBM-085A	1 OF 2	B-5	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100D	11448-CBM-085A	1 OF 2	B-5	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100E	11448-CBM-085A	1 OF 2	B-4	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100F	11448-CBM-085A	1 OF 2	B-5	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
----- CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-LM-TV-100G	11448-CBM-085A	1 OF 2	B-6	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					

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CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-LM-TV-100H	11448-CBM-085A	1 OF 2	B-7	AO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
CONTAINMENT LEAKAGE MONITORING OPEN SYSTEM SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE															

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1-MS-087	11448-CBM-064A	1 OF 6	C-6	MANUAL GATE	4.000	2	B		EV	C					
MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE															
1-MS-120	11448-CBM-064A	2 OF 6	C-6	MANUAL GATE	4.000	2	B		EV	C					
MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE															
1-MS-158	11448-CBM-064A	3 OF 6	C-6	MANUAL GATE	4.000	2	B		EV	C					
MAIN STEAM LINE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP ISOLATION VALVE															
1-MS-176	11448-CBM-064A	4 OF 6	C-7	CHECK VALVE	3.000	2	C		CV	C	42				
"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	3.000	2	C		CV	C	42				
"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	3.000	2	C		CV	C	42				
"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	NO STOP CHECK	30.000	2	C		CV VP	C OC	32				
"A" MAIN STEAM HEADER NON-RETURN VALVE															
1-MS-NRV-101B	11448-CBM-064A	2 OF 6	D-3	NO STOP CHECK	30.000	2	C		CV VP	C OC	32				
"B" MAIN STEAM HEADER NON-RETURN VALVE															
1-MS-NRV-101C	11448-CBM-064A	3 OF 6	D-3	NO STOP CHECK	30.000	2	C		CV VP	C OC	32				
"C" MAIN STEAM HEADER NON-RETURN VALVE															
1-MS-PCV-102A	11448-CBM-064A	4 OF 6	C-4	AO GATE	3.000	2	B		EV FS ST VP	C O C C O OC					
MAIN STEAM SUPPLY TRIP VALVE TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP															

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1-MS-PCV-102B	11448-CBM-064A	4 OF 6	D-5	AO GATE	3.000	2	B		EV	C					
									FS	C					
									ST	C					
									VP	OC					
----- 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	4.000	2	B		EV	C					
									FS	C					
									ST	C	47				
									VP	OC	47				
----- "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	4.000	2	B		EV	C					
									FS	C					
									ST	C	47				
									VP	OC	47				
----- "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	4.000	2	B		EV	C					
									FS	C					
									ST	C	47				
									VP	OC	47				
----- "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	4.000	2	C		SP	O					
"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS -----															
1-MS-SV-101B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	4.000	2	C		SP	O					
"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS -----															
1-MS-SV-101C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	4.000	2	C		SP	O					
"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS -----															
1-MS-SV-102A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6.000	2	C		SP	O					
"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS -----															
1-MS-SV-102B	11448-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6.000	2	C		SP	O					

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"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-102C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6.000	2		C	SP	0				
"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-103A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6.000	2		C	SP	0				
"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-103B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6.000	2		C	SP	0				
"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-103C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6.000	2		C	SP	0				
"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104A	11448-CBM-064A	1 OF 6	E-6	SAFETY VALVE	6.000	2		C	SP	0				
"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104B	11448-CBM-064A	2 OF 6	D-6	SAFETY VALVE	6.000	2		C	SP	0				
"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-104C	11448-CBM-064A	3 OF 6	D-6	SAFETY VALVE	6.000	2		C	SP	0				
"C" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105A	11448-CBM-064A	1 OF 6	E-5	SAFETY VALVE	6.000	2		C	SP	0				
"A" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105B	11448-CBM-064A	2 OF 6	D-5	SAFETY VALVE	6.000	2		C	SP	0				
"B" MAIN STEAM HEADER SAFETY VALVE, SV DISCHARGE TO ATMOS														
1-MS-SV-105C	11448-CBM-064A	3 OF 6	D-5	SAFETY VALVE	6.000	2		C	SP	0				
"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	30.000	2		B	E V S T V P	C C OC		1 1		
"A" MAIN STEAM HEADER TRIP VALVE														

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1-MS-TV-101B	11448-CBM-064A	2 OF 6	C-4	AO CHECK VALVE	30.000	2	B		EV ST VP	C C OC		1 1		
----- "B" MAIN STEAM HEADER TRIP VALVE -----														
1-MS-TV-101C	11448-CBM-064A	3 OF 6	C-4	AO CHECK VALVE	30.000	2	B		EV ST VP	C C OC		1 1		
----- "C" MAIN STEAM HEADER TRIP VALVE -----														
1-MS-TV-109	11448-CBM-064A	4 OF 6	F-5	AO GATE	3.000	2	B		EV FS ST VP	C C C OC				
----- MAIN STEAM HIGH PRESSURE DRAIN ISOLATION TO CONDENSER -----														
1-MS-TV-110	11448-CBM-064A	4 OF 6	F-7	AO GATE	2.000	2	B		EV FS ST VP	C C C OC				
----- MAIN STEAM HIGH PRESSURE DRAIN ISOLATION TO STEAM GENERATOR BLOWDOWN SYSTEM -----														

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1-RC-160	11448-CBM-086B	2 OF 3	D-7	CHECK VALVE	3.000	2	AC	CIV	CV LT	C C			6	
----- PRIMARY GRADE WATER SUPPLY TO PRESSURIZER RELIEF TANK -----														
1-RC-HCV-1556A	11448-CBM-086A	1 OF 3	E-8	AO PLUG	2.000	1	E		VP	OC				
----- LOOP FILL BOUNDARY VALVE -----														
1-RC-HCV-1556B	11448-CBM-086A	2 OF 3	D-8	AO PLUG	2.000	1	E		VP	OC				
----- LOOP FILL BOUNDARY VALVE -----														
1-RC-HCV-1556C	11448-CBM-086A	3 OF 3	D-3	AO PLUG	2.000	1	E		VP	OC				
----- LOOP FILL BOUNDARY VALVE -----														
1-RC-MOV-1535	11448-CBM-086B	1 OF 3	E-4	MO GATE	3.000	1	B		EV ST VP	C O C O OC				
----- BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE -----														
1-RC-MOV-1536	11448-CBM-086B	1 OF 3	D-4	MO GATE	3.000	1	B		EV ST VP	C O C O OC				
----- BLOCK VALVE FOR PRESSURIZER POWER OPERATED RELIEF VALVE -----														
1-RC-PCV-1455C	11448-CBM-086B	1 OF 3	D-3	AO PLUG	3.000	1	BC		EV FS SP ST VP	C O C O C O OC	7 7 7			
----- 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	3.000	1	BC		EV FS SP ST VP	C O C O C O OC	7 7 7	7 7		
----- PRESSURIZER POWER OPERATED PRESSURE CONTROL VALVE DISCHARGE TO PRESSURIZER RELIEF TANK -----														

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1-RC-SOV-100A1	11448-CBM-086A	3 OF 3	B-5	SO GATE	1.000	1	B		EV	C		33		
									FS	C		33		
									ST	C		33		
									VP	OC		33		
----- REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY -----														
1-RC-SOV-100A2	11448-CBM-086A	3 OF 3	A-5	SO GATE	1.000	1	B		EV	C		33		
									FS	C		33		
									ST	C		33		
									VP	OC		33		
----- REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY -----														
1-RC-SOV-100B1	11448-CBM-086A	3 OF 3	B-5	SO GATE	1.000	1	B		EV	C		33		
									FS	C		33		
									ST	C		33		
									VP	OC		33		
----- REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY -----														
1-RC-SOV-100B2	11448-CBM-086A	3 OF 3	A-5	SO GATE	1.000	1	B		EV	C		33		
									FS	C		33		
									ST	C		33		
									VP	OC		33		
----- REACTOR VESSEL VENT LINE ISOLATION VALVE TO REFUELING CAVITY -----														
1-RC-SV-1551A	11448-CBM-086B	1 OF 3	E-6	SAFETY VALVE	6.000	1	C		SP	O				
PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK -----														
1-RC-SV-1551B	11448-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6.000	1	C		SP	O				
PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK -----														
1-RC-SV-1551C	11448-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6.000	1	C		SP	O				
PRESSURIZER SAFETY VALVE, SV DISCHARGE TO PRESSURIZER RELIEF TANK -----														
1-RC-TV-1519A	11448-CBM-086B	2 OF 3	D-7	AO GATE	3.000	2	A	CIV	EV	C				
									FS	C				
									LT	C				
									ST	C				
									VP	OC				

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----- PRIMARY GRADE WATER SUPPLY TO PRT-#2 RCP SEAL STANDPIPES & FLUSH CONNECT, OUT CONT ISO VLV -----														

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1-RH-005	11448-CBM-087A	1 OF 2	E-5	CHECK VALVE	10.000	2	C		CV	C O		8 8		
"B" RHR PUMP DISCHARGE CHECK VALVE														
1-RH-011	11448-CBM-087A	1 OF 2	E-7	CHECK VALVE	10.000	2	C		CV	C O		8 8		
"A" RHR PUMP DISCHARGE CHECK VALVE														
1-RH-FCV-1605	11448-CBM-087A	2 OF 2	C-7	AO BFLY	12.000	2	B		EV FS ST	C C C		14 14 47	14	
RHR HEAT EXCHANGERS BYPASS FLOW CONTROL VALVE														
1-RH-HCV-1758	11448-CBM-087A	2 OF 2	C-5	AO BFLY	12.000	2	B		EV FS ST	O O O		14 14 47	14	
RHR HEAT EXCHANGERS DISCHARGE FLOW CONTROL VALVE														
1-RH-MOV-100	11448-CBM-087A	2 OF 2	E-3	MO GATE	6.000	2	AE	CIV	LT	C				
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	14.000	1	B		EV ST VP	O O OC		9 9		
RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
1-RH-MOV-1701	11448-CBM-087A	1 OF 2	A-4	MO GATE	14.000	1	B		EV ST VP	O O OC		9 9		
RHR PUMP SUPPLY ISOLATION FROM RC LOOP 1 HOT LEG														
1-RH-MOV-1720A	11448-CBM-087A	2 OF 2	C-3	MO GATE	10.000	1	B		EV ST VP	O O OC		10 10		
RHR RETURN ISOLATION TO "B" ACCUMULATOR DISCHARGE LINE														
1-RH-MOV-1720B	11448-CBM-087A	2 OF 2	B-3	MO GATE	10.000	1	B		EV ST VP	O O OC		10 10		
RHR RETURN ISOLATION TO "C" ACCUMULATOR DISCHARGE LINE														
1-RH-RV-1721	11448-CBM-087A	2 OF 2	D-4	RELIEF VALVE	3.000	2	C		SP	O				

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RHR SYSTEM RELIEF VALVE

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1-RL-003	11448-CBM-118A	2 OF 3	D-3	MAN DIAPHRAGM	3.000	2	AE	CIV	LT	C				
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	3.000	2	AE	CIV	LT	C				
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	3.000	2	AE	CIV	LT	C				
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	3.000	2	AE	CIV	LT	C				
REFUELING PURIFICATION FROM REACTOR CAVITY TO RP PUMPS, OUTSIDE CONT ISOLATION VALVE														

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1-RM-003	11448-CBP-014A	1 OF 1	B-5	CHECK VALVE	.750	2	AC	CIV	CV LT	C C			6	
----- RETURN TO CONTAINMENT FROM RADIATION MONITORING CABINET, INSIDE CONT ISOL CHECK VALVE -----														
1-RM-TV-100A	11448-CBP-014A	1 OF 1	B-4	AO GATE	.750	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- RETURN ISOLATION FROM AIR RADIATION MONITOR TO CONTAINMENT, OUTSIDE CONT ISOLATION VALVE -----														
1-RM-TV-100B	11448-CBP-014A	1 OF 1	F-8	AO GATE	.750	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, OUTSIDE CONT ISOLATION VALVE -----														
1-RM-TV-100C	11448-CBP-014A	1 OF 1	E-8	AO GATE	.750	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- SUPPLY ISOL TO AIR RAD MONITOR FROM CONTAINMENT VENT DUCT, INSIDE CONT ISOLATION VALVE -----														

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1-RS-011	11448-CBM-084B	2 OF 2	E-4	CHECK VALVE	10.000	2	AC	CIV	CV	C	43			
									LT	O	43			
----- "B" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE -----														
1-RS-017	11448-CBM-084B	2 OF 2	D-5	CHECK VALVE	10.000	2	AC	CIV	CV	C	43			
									LT	O	43			
----- "A" OUTSIDE RECIRC SPRAY PUMP INSIDE CONTAINMENT ISOLATION CHECK VALVE -----														
1-RS-046	11448-CBM-084B	2 OF 2	A-6	MAN GATE		2	AE	CIV	LT	C				
----- OUTSIDE RECIRC SPRAY PUMP SUCTION BYPASS LINE ISOLATION VALVE -----														
1-RS-052	11448-CBM-084B	2 OF 2	B-6	MAN GATE		2	AE	CIV	LT	C				
----- OUTSIDE RECIRC SPRAY PUMP SUCTION BYPASS LINE ISOLATION VALVE -----														
1-RS-MOV-155A	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12.000	2	A	CIV	EV	C				
									LT	O				
									ST	C				
									VP	O				
										OC				
----- "A" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLAT VALVE FROM CONTAINMENT SUMP -----														
1-RS-MOV-155B	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12.000	2	A	CIV	EV	C				
									LT	O				
									ST	C				
									VP	O				
										OC				
----- "B" OUTSIDE RECIRC SPRAY PUMP SUCTION ISOLAT VALVE FROM CONTAINMENT SUMP -----														
1-RS-MOV-156A	11448-CBM-084B	2 OF 2	D-6	MO BFLY	10.000	2	A	CIV	EV	C				
									LT	O				
									ST	C				
									VP	O				
										OC				
----- "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	10.000	2	A	CIV	EV	C				
									LT	O				
									ST	C				
									VP	O				
										OC				

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					VALVE SIZE	TEST CAT						
----- "A" OUTSIDE RECIRC SPRAY PUMP DISCHARGE ISO- LATION, OUTSIDE CONTAINMENT ISOLATION VALVE -----												

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1-RT-02	11448-CBM-124A	1 OF 4	E-7	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-06	11448-CBM-124A	1 OF 4	E-6	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RT-21	11448-CBM-124A	2 OF 4	E-7	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-25	11448-CBM-124A	2 OF 4	E-6	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														
1-RT-40	11448-CBM-124A	3 OF 4	E-7	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION INSIDE CONTAINMENT ISOLATION VALVE														
1-RT-44	11448-CBM-124A	3 OF 4	E-6	MANUAL GLOBE	3.000	2	AE	CIV	LT	C				
STEAM GENERATOR RECIRCULATION OUTSIDE CONTAINMENT ISOLATION VALVE														

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1-SA-060	11448-CBM-075G	1 OF 1	C-7	MAN GATE	2.000	2	AE	CIV	LT	C				
----- SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, INSIDE CONTAINMENT ISOLATION VALVE -----														
1-SA-062	11448-CBM-075G	1 OF 1	C-7	MAN GATE	2.000	2	AE	CIV	LT	C				
----- SERVICE AIR SUPPLY TO UNIT 1 CONTAINMENT, OUTSIDE CONTAINMENT ISOLATION VALVE -----														

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1-SI-025	11448-CBM-089A	1 OF 3	F-5	CHECK VALVE	8.000	2	AC		CV	C O LT			5 5	
----- RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER -----														
1-SI-032	11448-CBM-089A	1 OF 3	E-7	MAN GLOBE	1.000	2	AE	CIV	LT	C				
----- ACCUMULATOR MAKEUP LINE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-046A	11448-CBM-089A	1 OF 3	A-3	CHECK VALVE	12.000	2			CV	O			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	12.000	2			CV	O			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	12.000	2			CV	O	20			
----- "B" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP -----														
1-SI-050	11448-CBM-089A	1 OF 3	C-4	CHECK VALVE	10.000	2			CV	C O			2 2	
----- "B" LOW HEAD SI PUMP DISCHARGE CHECK VALVE -----														
1-SI-053	11448-CBM-089A	2 OF 3	B-4	CHECK VALVE	2.000	2			CV	O				
----- "B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE -----														
1-SI-056	11448-CBM-089A	1 OF 3	B-7	CHECK VALVE	12.000	2			CV	O	20			
----- "A" LOW HEAD SI PUMP SUCTION CHECK VALVE FROM CONTAINMENT SUMP -----														
1-SI-058	11448-CBM-089A	1 OF 3	C-6	CHECK VALVE	10.000	2			CV	C O			2 2	
----- "A" LOW HEAD SI PUMP DISCHARGE CHECK VALVE -----														
1-SI-061	11448-CBM-089A	2 OF 3	B-6	CHECK VALVE	2.000	2			CV	O				
----- "A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE DISCHARGE CHECK VALVE -----														
1-SI-073	11448-CBM-089A	2 OF 3	F-7	MAN GLOBE	.750	2	AE	CIV	LT	C				
----- ACCUMULATOR TEST LINE, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-079	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6.000	1	AC	PIV	CV	C O			4 4	

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1-SI-079	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6.000	1	AC	PIV	LT	C				
RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-082	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6.000	1	AC	PIV	CV	C			4	
RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-085	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6.000	1	AC	PIV	CV	C			4	
RCS COLD LEG SI ADMISSION CHECK VALVE														
1-SI-088	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6.000	1	C		CV	C	27		4	
RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-091	11448-CBM-089B	4 OF 4	C-7	CHECK VALVE	6.000	1	C		CV	C	27		4	
RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-094	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6.000	1	C		CV	C	27		4	
RCS HOT LEG SI ADMISSION CHECK VALVE														
1-SI-107	11448-CBM-089B	1 OF 4	B-7	CHECK VALVE	12.000	1	C		CV	O	26		3	
"A" ACCUMULATOR DISCHARGE CHECK VALVE														
1-SI-109	11448-CBM-089B	1 OF 4	B-8	CHECK VALVE	12.000	1	C		CV	C	26	29	3	
"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-128	11448-CBM-089B	2 OF 4	B-6	CHECK VALVE	12.000	1	C		CV	O	26		3	
"B" ACCUMULATOR DISCHARGE CHECK VALVE														
1-SI-130	11448-CBM-089B	2 OF 4	B-7	CHECK VALVE	12.000	1	C		CV	C	26	29	3	
"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-145	11448-CBM-089B	3 OF 4	B-5	CHECK VALVE	12.000	1	C		CV	O	26		3	

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"C" ACCUMULATOR DISCHARGE CHECK VALVE														
1-SI-147	11448-CBM-089B	3 OF 4	B-7	CHECK VALVE	12.000	1		C	CV	C		29	3	
"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE														
1-SI-150	11448-CBM-089A	3 OF 3	F-6	MAN GLOBE	.750	2		AE	CIV	LT	C			
BORON INJECTION TANK BYPASS LINE ISOLATION VALVE - TO RCS COLD LEG														
1-SI-174	11448-CBM-089A	3 OF 3	D-6	MAN GLOBE	.750	2		AE	CIV	LT	C			
HIGH HEAD SAFETY INJECTION TO RCS														
1-SI-224	11448-CBM-089B	4 OF 4	F-3	CHECK VALVE	3.000	2		C	CV	O			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	3.000	2		C	CV	O			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	3.000	2		C	CV	O			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	3.000	2		C	CV	O			4	
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	6.000	2		C	CV	O			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	6.000	2		C	CV	O			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	1.000	2		AC	CIV	CV LT	C C		6	
NITROGEN SUPPLY TO ACCUMULATORS, INSIDE CONTAINMENT ISOLATION CHECK VALVE														
1-SI-235	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	2.000	1		C	CV	C O			4 4	

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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	2.000	1	C	CV	C	O			4	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	2.000	1	C	CV	C	O			4	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	6.000	1	C	CV	C	O	27		4	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	6.000	1	C	CV	C	O	27		4	4
LOW HEAD SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG														
1-SI-240	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6.000	1	C	CV	C	O	27		4	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	6.000	1	AC	PIV	CV	C			4	4
LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-242	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6.000	1	AC	PIV	CV	C			4	4
LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-243	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6.000	1	AC	PIV	CV	C			4	4
LOW HEAD SI TO RCS COLD LEG ISOLATION CHECK VALVE														
1-SI-301	11448-CBM-089A	1 OF 3	B-7	MAN GLOBE	.750	2	AE	CIV	LT	C				
LOW HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS, BYPASS LINE ISOLATION VALVE														
1-SI-311	11448-CBM-089A	1 OF 3	A-5	MAN GLOBE	.750	2	AE	CIV	LT	C				

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LOW HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS, BYPASS LINE ISOLATION VALVE															
1-SI-410	11448-CBM-089A	1 OF 3	F-4	CHECK VALVE	10.000	2		C	CV	O				5	

RWST SUPPLY CHECK VALVE TO CHARGING PUMP SUCTION HEADER															
1-SI-MOV-1842	11448-CBM-089A	3 OF 3	D-7	MO GATE	3.000	2		A	CIV	EV LT ST VP	C O C O OC		25 25 25		

HIGH HEAD SI FROM CHARGING HEADER TO RCS COLD LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-SI-MOV-1860A	11448-CBM-089A	1 OF 3	B-7	MO GATE	12.000	2		A	CIV	EV LT ST VP	O C O OC				

"A" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP															
1-SI-MOV-1860B	11448-CBM-089A	1 OF 3	B-5	MO GATE	12.000	2		A	CIV	EV LT ST VP	O C O OC				

"B" LOW HEAD SI PUMP SUCTION ISOLATION FROM CONTAINMENT SUMP															
1-SI-MOV-1862A	11448-CBM-089A	1 OF 3	A-3	MO GATE	12.000	2		B	EV ST VP	C C OC					

"A" LOW HEAD SI PUMP SUCTION FROM RWST															
1-SI-MOV-1862B	11448-CBM-089A	1 OF 3	B-3	MO GATE	12.000	2		B	EV ST VP	C C OC					

"B" LOW HEAD SI PUMP SUCTION FROM RWST															
1-SI-MOV-1863A	11448-CBM-089A	2 OF 3	C-5	MO GATE	8.000	2		B	EV ST VP	C O C O OC					

"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	8.000	2		B	EV ST	C O C					

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1-SI-MOV-1863B	11448-CBM-089A	2 OF 3	D-3	MO GATE	8.000	2	B		ST VP	O OC				
----- "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	10.000	2	B		EV ST VP	C O C O OC				
----- "A" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE -----														
1-SI-MOV-1864B	11448-CBM-089A	2 OF 3	D-4	MO GATE	10.000	2	B		EV ST VP	C O C O OC				
----- "B" LOW HEAD SI PUMP COLD LEG DISCHARGE STOP VALVE -----														
1-SI-MOV-1865A	11448-CBM-089B	1 OF 4	C-7	MO GATE	12.000	2	B		EV ST VP	C O C O OC				
----- "A" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG -----														
1-SI-MOV-1865B	11448-CBM-089B	2 OF 4	C-6	MO GATE	12.000	2	B		EV ST VP	C O C O OC				
----- "B" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG -----														
1-SI-MOV-1865C	11448-CBM-089B	3 OF 4	C-5	MO GATE	12.000	2	B		EV ST VP	C O C O OC				
----- "C" ACCUMULATOR DISCHARGE ISOLATION VALVE TO RCS COLD LEG -----														
1-SI-MOV-1867C	11448-CBM-089A	3 OF 3	E-6	MO GATE	3.000	2	A	CIV	EV LT ST VP	C O C C O OC	18	18	18	18
----- HIGH HEAD SAFETY INJECTION TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE -----														

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1-SI-MOV-1867D	11448-CBM-089A	3 OF 3	F-6	MO GATE	3.000	2	A	CIV	EV	C		18		
									LT	C		18		
									ST	C		18		
									VP	OC		18		
----- HIGH HEAD SAFETY INJECTION TO RCS COLD LEG, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-MOV-1869A	11448-CBM-089A	3 OF 3	D-7	MO GATE	3.000	2	A	CIV	EV	C		25		
									LT	C		25		
									ST	C		25		
									VP	OC		25		
----- HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-MOV-1869B	11448-CBM-089A	3 OF 3	E-4	MO GATE	3.000	2	A	CIV	EV	C		25		
									LT	C		25		
									ST	C		25		
									VP	OC		25		
----- HIGH HEAD SI FROM CHARGING HEADER TO RCS HOT LEGS, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-MOV-1885A	11448-CBM-089A	2 OF 3	B-6	MO GATE	2.000	2	A		EV	C				
									LT	C				
									ST	C				
									VP	OC				
----- "A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION -----														
1-SI-MOV-1885B	11448-CBM-089A	2 OF 3	B-4	MO GATE	2.000	2	A		EV	C				
									LT	C				
									ST	C				
									VP	OC				
----- "B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION -----														
1-SI-MOV-1885C	11448-CBM-089A	2 OF 3	B-4	MO GATE	2.000	2	A		EV	C				
									LT	C				
									ST	C				
									VP	OC				
----- "B" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION -----														
1-SI-MOV-1885D	11448-CBM-089A	2 OF 3	B-6	MO GATE	2.000	2	A		EV	C				
									LT	C				
									ST	C				
									VP	OC				

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"A" LOW HEAD SI PUMP MINIMUM FLOW/TEST LINE ISOLATION														
1-SI-MOV-1890A	11448-CBM-089A	2 OF 3	C-7	MO GATE	10.000	2	A	CIV	EV	C				
									LT	C				
									ST	C				
									VP	OC				
"A" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-MOV-1890B	11448-CBM-089A	2 OF 3	E-7	MO GATE	10.000	2	A	CIV	EV	C				
									LT	C				
									ST	C				
									VP	OC				
"B" LOW HEAD SI PUMP HOT LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-MOV-1890C	11448-CBM-089A	2 OF 3	D-7	MO GATE	10.000	2	A	CIV	EV	C		17		
									LT	C		17		
									ST	C		17		
									VP	OC		17		
LOW HEAD SI PUMPS COLD LEG DISCHARGE STOP VALVE, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-RV-1845A	11448-CBM-089A	2 OF 3	E-6	RELIEF VALVE	1.000	2	C		SP	O				
"A" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
1-SI-RV-1845B	11448-CBM-089A	2 OF 3	E-5	RELIEF VALVE	1.000	2	C		SP	O				
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	1.000	2	C		SP	O				
"B" LOW HEAD SI PUMP DISCHARGE RELIEF VALVE, RV DISCHARGE TO SAFEGUARDS AREA SUMP														
1-SI-TV-100	11448-CBM-089A	3 OF 3	B-7	AO GATE	1.000	2	A	CIV	EV	C				
									FS	C				
									LT	C				
									ST	C				
									VP	OC				
NITROGEN SUPPLY TO ACCUMULATORS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-SI-TV-101A	11448-CBM-089B	1 OF 4	C-3	AO GATE	1.000	2	A	CIV	EV	C				
									FS	C				
									LT	C				

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1-SI-TV-101A	11448-CBM-089B	1 OF 4	C-3	AO GATE	1.000	2	A	CIV	ST VP	C OC				
----- ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, INSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-TV-101B	11448-CBM-089B	1 OF 4	B-2	AO GATE	1.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- ACCUMULATORS TO WASTE GAS CHARCOAL FILTERS, OUTSIDE CONTAINMENT ISOLATION VALVE -----														
1-SI-TV-102A	11448-CBM-089A	1 OF 3	F-7	AO GATE	8.000	2	B		EV FS ST VP	O O O OC				
----- UNIT 1 RWST TO UNIT 2 RWST CROSS TIE -----														
1-SI-TV-102B	11448-CBM-089A	1 OF 3	E-7	AO GATE	8.000	2	B		EV FS ST VP	O O O OC				
----- UNIT 1 RWST TO UNIT 2 RWST CROSS TIE -----														

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1-SS-TV-100A	11448-CBM-082B	2 OF 2	F-7	SO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- PRESSURIZER LIQUID SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-100B	11448-CBM-082B	2 OF 2	F-6	AO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- PRESSURIZER LIQUID SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-101A	11448-CBM-082B	2 OF 2	E-7	SO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- PRESSURIZER VAPOR SPACE SAMPLE LINE, INSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-101B	11448-CBM-082B	2 OF 2	E-6	AO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- PRESSURIZER VAPOR SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-102A	11448-CBM-082B	2 OF 2	D-7	SO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- REACTOR COOLANT COLD LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-102B	11448-CBM-082B	2 OF 2	D-6	SO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
----- REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-103A	11448-CBM-082B	2 OF 2	F-7	SO GATE	.375	2	AE	CIV	LT VP	C OC					
----- RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE -----															
1-SS-TV-103B	11448-CBM-082B	2 OF 2	F-6	SO GATE	.375	2	AE	CIV	LT	C					

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1-SS-TV-103B	11448-CBM-082B	2 OF 2	F-6	SO GATE	.375	2	AE	CIV	VP	OC					
RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE															
1-SS-TV-104A	11448-CBM-082B	2 OF 2	D-7	SO GATE	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
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	.375	2	A	CIV	EV FS LT ST VP	C C C C OC					
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	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
REACTOR COOLANT HOT LEGS SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE															
1-SS-TV-106B	11448-CBM-082B	2 OF 2	E-6	SO GATE	.375	1	A	CIV	EV FS LT ST VP	C C C C OC					
REACTOR COOLANT HOT LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE															

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1-SV-TV-102A	11448-CBM-066A	2 OF 3	E-4	AO GATE	6.000	2	A	CIV	EV FS LT ST VP	C C C C OC				

 CONDENSER AIR REMOVAL DISCHARGE TO CONTAIN-
 MENT, OUTSIDE CONTAINMENT ISOLATION VALVE

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VALVE NUMBER	DRAWING NUMBER	SHEET NUMBER	DRWG COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISO IWV CAT	VALVE TYPE	TEST TYPE	TEST POS	REL REQ V-	CS JUST CSV-	RR JUST RRV-	ALT TEST VCN-
1-SW-108	11448-CBM-071B	1 OF 2	B-4	CHECK VALVE	2.000	3	C		CV	C O	50			
----- CHARGING PUMP SERVICE WATER PUMP CHECK VALVE -----														
1-SW-113	11448-CBM-071B	1 OF 2	B-7	CHECK VALVE	2.000	3	C		CV	C O	50			
----- CHARGING PUMP SERVICE WATER PUMP CHECK VALVE -----														
1-SW-130	11448-CBM-071B	1 OF 2	D-7	CHECK VALVE	2.000	NC	C		CV	O	50			
----- CIRCULATING WATER TO DISCHARGE TUNNEL CHECK VALVE -----														
1-SW-206	11448-CBM-071A	3 OF 4	E-8	MAN GATE	2.000	2	AE	CIV	LT	C				
----- CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER -----														
1-SW-208	11448-CBM-071A	3 OF 4	E-8	MAN GATE	2.000	2	AE	CIV	LT	C				
----- CONTAINMENT ISOLATION VALVE FOR SERVICE WATER DRAINS TO HEAT EXCHANGER -----														
1-SW-246	11448-CBM-071A	3 OF 4	C-8	CHECK VALVE	3.000	NC	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE -----														
1-SW-247	11448-CBM-071A	3 OF 4	D-7	CHECK VALVE	3.000	3	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE -----														
1-SW-248	11448-CBM-071A	3 OF 4	C-7	CHECK VALVE	3.000	NC	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE -----														
1-SW-249	11448-CBM-071A	3 OF 4	D-6	CHECK VALVE	3.000	3	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE -----														
1-SW-250	11448-CBM-071A	3 OF 4	C-6	CHECK VALVE	3.000	NC	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE -----														
1-SW-251	11448-CBM-071A	3 OF 4	D-5	CHECK VALVE	3.000	3	C		CV	O				
----- RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE -----														
1-SW-252	11448-CBM-071A	3 OF 4	C-5	CHECK VALVE	3.000	NC	C		CV	O				

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RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN VENT VALVE															
1-SW-253	11448-CBM-071A	3 OF 4	D-4	CHECK VALVE	3.000	3		C	CV	0					

RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY VENT VALVE															
1-SW-262	11448-CBM-071B	1 OF 2	B-4	CHECK VALVE	2.000	3		C	CV	0	50				

CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE															
1-SW-263	11448-CBM-071D	1 OF 1	C-7	AO GATE	6.000	3		E	VP	OC					

CONTROL ROOM CONDENSER WATER SELF CLEANING STRAINER ISOLATION VALVE															
1-SW-264	11448-CBM-071D	1 OF 1	C-5	MANUAL BFLY	6.000	3		B	EV	0					

CONTROL ROOM CONDENSER WATER TO BACKUP STRAINER BYPASS LINE ISOLATION VALVE															
1-SW-265	11448-CBM-071D	1 OF 1	C-7	MANUAL BFLY	6.000	3		B	EV	0					

CONTROL ROOM CONDENSER WATER TO BACKUP STRAINER BYPASS LINE ISOLATION VALVE															
1-SW-268	11448-CBM-071B	1 OF 2	B-6	CHECK VALVE	2.000	3		C	CV	0	50				

CHARGING PUMP SERVICE WATER PUMP DISCHARGE CHECK VALVE															
1-SW-313	11448-CBM-071D	1 OF 1	F-7	CHECK VALVE	3.000	3		C	CV	0	46				

CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE															
1-SW-323	11448-CBM-071D	1 OF 1	F-5	CHECK VALVE	3.000	3		C	CV	0	46				

CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE															
1-SW-MOV-101A	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36.000	3		B	EV ST VP	C C OC					

BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE															
1-SW-MOV-101B	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36.000	3		B	EV ST VP	C C OC					

BEARING COOLING WATER HEAT EXCHANGER ISOLATION VALVE															
1-SW-MOV-102A	11448-CBM-071A	2 OF 4	D-6	MO BFLY	42.000	3		B	EV ST	C O C					

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1-SW-MOV-102A	11448-CBM-071A	2 OF 4	D-6	MO BFLY	42.000	3	B		ST VP	O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS -----														
1-SW-MOV-102B	11448-CBM-071A	2 OF 4	D-5	MO BFLY	42.000	3	B		EV ST VP	C O C O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO COMPONENT COOLING HEAT EXCHANGERS -----														
1-SW-MOV-103A	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30.000	3	B		EV ST VP	O O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS -----														
1-SW-MOV-103B	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30.000	3	B		EV ST VP	O O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS -----														
1-SW-MOV-103C	11448-CBM-071A	3 OF 4	B-3	MO BFLY	30.000	3	B		EV ST VP	O O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS -----														
1-SW-MOV-103D	11448-CBM-071A	3 OF 4	B-2	MO BFLY	30.000	3	B		EV ST VP	O O OC				
----- SERVICE WATER HEADER SUPPLY ISOLATION TO RECIRC SPRAY HEAT EXCHANGERS -----														
1-SW-MOV-104A	11448-CBM-071A	3 OF 4	D-7	MO BFLY	24.000	3	B		EV ST VP	C O C O OC				
----- 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	24.000	3	B		EV ST VP	C O C O OC				
----- SERVICE WATER SUPPLY TO "B" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE -----														

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1-SW-MOV-104C	11448-CBM-071A	3 OF 4	D-5	MO BFLY	24.000	3	B		EV	C					

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	24.000	3	B		EV	C					

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	24.000	3	B		EV	C					

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	24.000	3	B		EV	C					

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	24.000	3	B		EV	C					

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	24.000	3	B		EV	C					

SERVICE WATER RETURN FROM "D" RECIRC SPRAY HEAT EXCHANGER, OUTSIDE CONT ISOLATION VALVE															
1-SW-PCV-100A	11448-CBM-071D	1 OF 1	F-7	AO GATE	3.000	3	B		EV	0					

CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE															

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1-SW-PCV-100B	11448-CBM-071D	1 OF 1	F-5	AO GATE	3.000	3	B		EV FS ST	0 0 0				47
----- CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE -----														
1-SW-PCV-100C	11448-CBM-071D	1 OF 1	F-3	AO GATE	3.000	3	B		EV FS ST	0 0 0				47
----- CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE -----														
1-SW-PCV-101A	11448-CBM-071D	1 OF 1	E-8	AO GATE	3.000	3	B		EV FS ST	C C C				47
----- CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE -----														
1-SW-PCV-101B	11448-CBM-071D	1 OF 1	E-6	AO GATE	3.000	3	B		EV FS ST	C C C				47
----- CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE -----														
1-SW-PCV-101C	11448-CBM-071D	1 OF 1	E-4	AO GATE	3.000	3	B		EV FS ST	C C C				47
----- CONTROL ROOM CONDENSER WATER SYSTEM PRESSURE CONTROL VALVE -----														
1-SW-TCV-108A	11448-CBM-071B	1 OF 2	E-7	AO GATE	1.500	3	B		EV FS ST	0 0 0				47
----- 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	1.500	3	B		EV FS ST	0 0 0				47
----- 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	1.500	3	B		EV FS ST	0 0 0				47
----- SERVICE WATER TO CHARGING PUMP LUBE OIL COOLER TEMPERATURE CONTROL VALVE -----														
2-SW-333	11448-CBM-071D	1 OF 1	F-3	CHECK VALVE	3.000	3	C		CV	0				46
----- CONTROL ROOM CONDENSER WATER SYSTEM PUMP DISCHARGE CHECK VALVE -----														

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1-VA-001	11448-CBM-083A	1 OF 3	B-7	MAN GATE	2.000	2	AE	CIV	LT	C				
VENT LINE FROM PRIMARY VENT POT, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-VA-006	11448-CBM-083B	3 OF 3	F-2	MAN GATE	2.000	2	AE	CIV	LT	C				
VENT LINE FROM PRIMARY VENT POT, INSIDE CONTAINMENT ISOLATION VALVE														

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1-VG-TV-109A	11448-CBM-083B	1 OF 3	F-7	AO GATE	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- 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	2.000	2	A	CIV	EV FS LT ST VP	C C C C OC				
----- VENT LINE ISOL FROM PRIMARY DRAINS TRANSFER TANK TO GAS STRIPPERS, OUTSIDE CONT ISOL VLV -----														

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1-VP-012	11448-CBM-066A	2 OF 3	F-4	CHECK VALVE	6.000	2	AC	CIV	CV LT	C C					6

 CONDENSER AIR REMOVAL DISCHARG TO CONTAINMENT
 INSIDE CONTAIN ISOLATION CHECK VALVE

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1-VS-285	11448-FB -041A	2 OF 2	C-6	MANUAL GATE	3.000	3	B		EV	C				
CONTROL ROOM CHILLED WATER CROSS TIE ISOLATION VALVE														
1-VS-286	11448-FB -041A	2 OF 2	C-5	MANUAL GATE	3.000	3	B		EV	C				
CONTROL ROOM CHILLED WATER CROSS TIE ISOLATION VALVE														
1-VS-288	11448-FB -041A	2 OF 2	B-7	CHECK VALVE	2.000	3	C		CV	C				
CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-292	11448-FB -041A	2 OF 2	B-5	CHECK VALVE	2.000	3	C		CV	C				
CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-296	11448-FB -041A	2 OF 2	B-4	CHECK VALVE	2.000	3	C		CV	C				
CONTROL ROOM CHILLED WATER PUMP DISCHARGE CHECK VALVE														
1-VS-MOV-100A	11448-CBB-006A	1 OF 2	C-4	MO BFLY	36.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT PURGE SUPPLY, INSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-100B	11448-CBB-006A	1 OF 2	C-3	MO BFLY	36.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT PURGE SUPPLY, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-100C	11448-CBB-006A	1 OF 2	D-4	MO BFLY	36.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT PURGE EXHAUST, INSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-100D	11448-CBB-006A	1 OF 2	D-3	MO BFLY	36.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT PURGE EXHAUST, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-101	11448-CBB-006A	1 OF 2	D-3	MO BFLY	8.000	2	AE	CIV	LT VP	C OC				
CONTAINMENT PURGE BYPASS, OUTSIDE CONTAINMENT ISOLATION VALVE														
1-VS-MOV-102	11448-CBB-006A	1 OF 2	C-3	MO BFLY	18.000	2	AE	CIV	LT	C				

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1-VS-MOV-102	11448-CBB-006A	1 OF 2	C-3	MO BFLY	18.000	2	AE	CIV	VP	OC				
CONTAINMENT VACUUM BREAKER														

4.5 VALVE TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements which 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
Relief Request Withdrawn

RELIEF REQUEST V-2
Replaced by Cold Shutdown Justification CSV-1

RELIEF REQUEST V-3
Replaced by Cold Shutdown Justification CSV-2

RELIEF REQUEST V-4
Replaced by Cold Shutdown Justification CSV-4

RELIEF REQUEST V-5

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.

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Request

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

RELIEF REQUEST V-5 (Cont.)

of the drain valve is another 14 inch check valve, so the only available flow area from the test volume is the drain valve.

Alternate Testing Proposed

These valves will be grouped together and one valve from this group will be disassembled every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with Generic Letter 89-04, Position 2.

RELIEF REQUEST V-6

Relief Request Withdrawn

RELIEF REQUEST V-7

Replaced by Cold Shutdown CSV-5

RELIEF REQUEST V-8

Replaced by Cold Shutdown Justification CSV-6

RELIEF REQUEST V-9

Replaced by Cold Shutdown Justification CSV-20

RELIEF REQUEST V-10

Replaced by Cold Shutdown Justification CSV-23

RELIEF REQUEST V-11

Replaced by Cold Shutdown Justification CSV-8

RELIEF REQUEST V-12

Replaced by Cold Shutdown Justification CSV-9

RELIEF REQUEST V-13

Replaced by Cold Shutdown Justification CSV-10

RELIEF REQUEST V-14

Replaced by Reactor Refueling Justification RRV-1

RELIEF REQUEST V-15

Replaced by Cold Shutdown Justification CSV-11

RELIEF REQUEST V-16

Replaced by Cold Shutdown Justification CSV-12

RELIEF REQUEST V-17

Replaced by Cold Shutdown Justification CSV-13

RELIEF REQUEST V-18

Replaced by Cold Shutdown Justification CSV-15

RELIEF REQUEST V-19

Replaced by Cold Shutdown Justification CSV-16

RELIEF REQUEST V-20

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

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Request

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.

Alternate Testing Proposed

These valves will be grouped together and one valve from this group will be disassembled and inspected every reactor refueling. A different valve will be disassembled every reactor refueling. This test frequency is in accordance with Generic Letter 89-04, Position 2.

RELIEF REQUEST V-21

Replaced by Reactor Refueling Justification RRV-2

RELIEF REQUEST V-22

Replaced by Cold Shutdown Justification CSV-17

RELIEF REQUEST V-23

Replaced by Cold Shutdown Justification CSV-25

RELIEF REQUEST V-24

Replaced by Cold Shutdown Justification CSV-18

RELIEF REQUEST V-25

Relief Request Withdrawn

RELIEF REQUEST V-26

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

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Section 4.3.2.4(a) - This section states in part that, "The necessary valve obturator movement shall be demonstrated by exercising the valve and observing that either the obturator travels to the seat on cessation or reversal of flow, or opens to the position required to fulfill its function, as specified in para. 1.1, or both. Observation may be by observing a direct indicator such as a position indicating device, or by other indicator(s) such as changes in system pressure, flow rate, level, temperature, seat leakage testing or other positive means." This section implies that the techniques used to verify obturator movement be applied to every valve on a test frequency that is practical.

Basis For Request

Non-intrusive techniques are used to verify obturator movement for the SI accumulator discharge check valves. These techniques provide a "positive means" for verifying obturator movement, however, due to the burden of applying these techniques in the field, a sampling program will be used as described below.

Alternate Testing Proposed

During the first refueling outage where non-intrusive techniques are used, all valves in the group will be tested to verify that the techniques verify valve obturator movement. During subsequent refueling outages, flow testing will be performed on all valves in the group, but the non-intrusive techniques need be applied only to one valve in each group, on a rotating basis, unless indications of problems are identified. In this case, all valves in the group will be subjected to the non-intrusive techniques. The test frequency is in accordance with Generic Letter 89-04, Position 2.

RELIEF REQUEST V-26 (Cont.)

Valves 1-SI-130 and 147 are in one group and valves 1-SI-107, 109, 128 and 145 are in the other group. Because 1-SI-130 and 147 are downstream from where RHR connects to the SI line, they experience different service conditions than the other valves. The justification for testing these valves during reactor refuelings was moved to Reactor Refueling Justification RRV-3

RELIEF REQUEST V-27

System : Safety Injection

Valve(s): 1-SI-88 1-SI-238
 1-SI-91 1-SI-239
 1-SI-94 1-SI-240

Category: C

Class : 1

Function: Safety Injection to RCS Hot Legs Check Valves

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Section 4.3.2.2 - Each check valve shall be exercised.

Basis For Request

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.

Alternate Testing Proposed

A leakage test will be performed on each of the three pairs of valves and the leakage of each pair will be compared to a limit. If the leakage limit is exceeded, both valves in the pair will be subject to inspection, repair or replacement. Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C.

RELIEF REQUEST V-28

Replaced by Reactor Refueling Justification RRV-5

RELIEF REQUEST V-29

Replaced by Cold Shutdown Justification CSV-21

RELIEF REQUEST V-30

Relief Request Withdrawn

RELIEF REQUEST V-31

Replaced by Cold Shutdown Justification CSV-33

RELIEF REQUEST V-32

Replaced by Cold Shutdown Justification CSV-22

RELIEF REQUEST V-33

Relief Request Withdrawn

RELIEF REQUEST V-34

Relief Request Withdrawn

RELIEF REQUEST V-35

Replaced by Cold Shutdown Justification CVS-7

RELIEF REQUEST V-36

Replaced by Non-Code Alternative Testing VNC-4

RELIEF REQUEST V-37

Replaced by Non-Code Alternative Testing VNC-3

RELIEF REQUEST V-38

Relief Request Withdrawn

RELIEF REQUEST V-39

Relief Request Withdrawn

INTERIM RELIEF REQUEST V-40

Relief Request Withdrawn

RELIEF REQUEST V-41

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

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Relief

These check valves cannot be partial or full 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.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

Alternate Testing Proposed

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 inspected on a reactor refueling frequency. A different valve from each group will be disassembled for each inspection. If a valve fails its inspection, the remaining valves in the group will be disassembled and inspected. The test frequency is in accordance with Generic Letter 89-04, Position 2.

RELIEF REQUEST V-42

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

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Relief

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

However, these check valves can be isolated and disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

Alternate Testing Proposed

These valves will be grouped together and one valve from this group will be disassembled and inspected on a reactor refueling frequency. A different valve will be disassembled for each inspection. If a valve fails its inspection, the remaining valves in the group will be disassembled and inspected. This test frequency is in accordance with Generic Letter 89-04, Position 2.

The valves will be full flow tested every three months.

RELIEF REQUEST V-43

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

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Relief

These check valves cannot be partial or full flow exercised 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 test (partial open or closed) is to install a blank flange downstream and locally perform an partial open and 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 seat 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 seat test or a partial open 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 closed positions is by disassembly.

RELIEF REQUEST V-43 (Cont.)

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.

Alternate Testing Proposed

For testing to the open and closed positions, valves 1-CS-105 and 127 will be grouped together and one valve from the group will be disassembled and inspected every reactor refueling. A different valve will be disassembled every reactor refueling. A partial open test cannot be performed on valves 1-CS-105 and 127 with the current piping configuration. This test frequency is in accordance with Generic Letter 89-04, Position 2.

For testing to the full open position; 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 inspected every reactor refueling. A different valve from each group will be disassembled every reactor refueling. This test frequency is in accordance with Generic Letter 89-04, Position 2.

Technical Specifications Paragraph 4.5.C. requires verification that valves 1-CS-13 and 24, and 1-RS-11 and 17 open when the discharge line of the pump is pressurized with air and seat when a vacuum is applied. This test partially strokes the valves open. Valves 1-CS-13 and 24, and 1-RS-11 and 17 are containment isolation valves and are tested to the closed position each refueling outage as part of the Appendix J leak testing program.

RELIEF REQUEST V-44

Replaced by Reactor Refueling Justification RRV-6

RELIEF REQUEST V-45

Replaced by Reactor Refueling Justification RRV-7

INTERIM RELIEF REQUEST V-46

System : Service Water

Valve(s): 1-SW-313
1-SW-323
2-SW-333

Category: C

Class : 3

Function: Service Water Supply to Main Control Room Air
Conditioning System Chillers

OM Part 10 Code Requirements
For Which Interim Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Interim Relief

These check valves cannot be full flow tested because instrumentation is not installed to directly measure flow or differential pressure across the valve.

According to Technical Specification Paragraph 3.23.C.1.b, "If one chiller becomes inoperable, return the inoperable chiller to operable status within seven (7) days or bring both units to Hot Shutdown within the next six (6) hours and be in Cold Shutdown within the following 30 hours." Because the main control and emergency switchgear room emergency ventilation system is common for both units, the above action statement applies whenever Unit 1 or Unit 2 is operating.

Given the scope of the required instrumentation modifications and the existing system configuration, it is estimated that installation of the appropriate flow and pressure instrumentation cannot be completed within the Technical Specification 7 day action statement. Two additional Main Control Room and Emergency Switchgear Room Air Conditioning System chillers are scheduled for installation by the end of 1993. The additional chillers will eliminate the need for entry into the Technical Specification action statement to install the instrumentation. Also, the flow elements for the chiller service water pumps cannot be installed at power. Therefore, installation of the additional instrumentation is scheduled to be completed by the end of the Unit 1 Cycle 12 refueling outage currently scheduled

INTERIM RELIEF REQUEST V-46 (Cont.)

for second quarter of 1994. These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

Interim Alternate Testing Proposed

These valves will be grouped together and one valve from this group will be disassembled and inspected on a reactor refueling frequency. A different valve will be disassembled for each inspection. If a valve fails its inspection, the remaining valves in the group will be disassembled and inspected. They will be part stroked open once every three months with flow. This test frequency is in accordance with Generic Letter 89-04, Position 2.

When flow instrumentation is installed in the second quarter of 1994, flow will be measured directly and the valves will be full flow tested once every three months.

RELIEF REQUEST V-47

System : Various

Valve(s): Valves affected by this relief request are identified by Table V-47.

Category:

Class :

Function:

OM Part 10 Code Requirements For Which Relief Is Requested

Paragraph 1.3, definition of full-stroke time - the time interval from initiation of the actuating signal to the indication of the end of the operating stroke.

Paragraph 4.2.1.9(b) which states in part that "Valves with measured stroke times which do not meet the acceptance criteria of para. 4.2.1.8 shall be immediately retested or declared inoperable." Paragraph 4.2.1.8 presents acceptance criteria of $\pm 25\%$ for power-operated valves with reference stroke times greater than 10 seconds (4.2.1.8(b)) and $\pm 50\%$ for power-operated valves with reference stroke times less than or equal to 10 seconds (4.2.1.8(d)).

Basis For Relief

The valves listed in Table V-47 either have no remote indication and no remote control, or no remote open/close control, or the test requires that the power source be interrupted at the valve and not at the switch. Also, these valves typically exhibit stroke time data scatter from test to test that can exceed the 25% and 50% required by Paragraphs 4.2.1.8(b) and (d). Therefore, timing the full-stroke from the initiation of the actuating signal and applying the acceptance criteria of Paragraphs 4.2.1.8(b) and (d) are not practical.

Valve 1-CC-LCV-101 maintains the water level in the seal cooling water tank for component cooling to charging pump cooling system. This valve has no remote indication or manual position switch. The valve is exercised by manipulating the tank level signal and isolating the power source, and timed by locally observing stem movement. Differences in interpreting when the valve stem starts and stops will affect the repeatability of the stroke time measurements.

The position of valves 1-MS-RV-101A, B and C is controlled by a potentiometer. Although the valves have remote position

RELIEF REQUEST V-47 (Cont.)

indication, there is no open/closed switch. The speed at which the valve goes open or closed depends upon the speed at which the operator turns the potentiometer knob, which in turn affects the repeatability of the stroke time measurements.

Valves 1-RH-FCV-1605 and 1-RH-HCV-1758 are controlled by a potentiometer and have no remote indication. The stroke time is measured by locally observing stem movement. Differences in interpreting when the valve stem starts and stops affect the repeatability of the stroke time measurements.

Valves 1-SW-PCV-100A, B and C, and 1-SW-PCV-101A, B and C have no remote indication or manual remote control. The valve position is manipulated by venting the actuator diaphragm and the stroke time is measured by observing the movement of the local position indicator. Differences in the speed at which the petcock is opened to vent the diaphragm and in interpreting when the position indicator starts and stops affect the repeatability of the stroke time measurements.

Valves 1-SW-TCV-108A, B and C control the flow of service water to the charging pump lube oil coolers. There is no remote indication or manual position switch. Valve position is controlled by lube oil temperature. The valves are locally manipulated by isolating the power source, and timed by observing stem movement. Differences in interpreting when the valve stem starts and stops affect the repeatability of the stroke time measurements.

Alternate Testing Proposed

The full-stroke will be measured by locally observing stem movement and not from the initiation of the actuating signal. Also, maximum stroke times will be established in accordance with Paragraph 4.2.1.9(a). However, the ranges described in Paragraphs 4.2.1.8(b) and (d) will not be applied.

RELIEF REQUEST V-47 (Cont.)

TABLE V-47

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
1-CC-LCV-101	B	3	Charging Pump Seal Cooling Surge Tank Level Control
1-MS-RV-101A,B,C	B	2	Main Steam Header Discharge to Atmosphere PORV
1-RH-FCV-1605	B	2	RHR Heat Exchanger Bypass Flow Control Valve
1-RH-HCV-1758	B	2	RHR Heat Exchanger Discharge Flow Control Valve
1-SW-PCV-100A,B,C	B	3	Control Room Condenser
1-SW-PCV-101A,B,C	B	3	Water System Pressure Control Valves
1-SW-TCV-108A,B,C	B	3	Service Water to Charging Pump Lube Oil Cooler Temperature Control Valves

INTERIM RELIEF REQUEST V-48

Replaced by Cold Shutdown Justification CVS-32

RELIEF REQUEST V-49

Relief Request Withdrawn

RELIEF REQUEST V-50

System : Service Water

Valve(s): 1-SW-108 1-SW-262
 1-SW-113 1-SW-268
 1-SW-130

Category: C

Class : 3 (1-SW-108,113,262,268)
 NC (1-SW-130)

Function: Charging Pump Service Water Pump discharge Check
 Valves

OM Part 10 Code Requirements
For Which Relief Is Requested

OM Part 10, Paragraph 4.3.2.4(c) reads in part that, "disassembly every refueling outage to verify operability of check valves may be used." This sentence implies that each valve in the group given above must be disassembled every refueling outage.

Basis For Request

The design basis for the charging pump service water system is currently undergoing reevaluation. A full flow acceptance criteria will not be available until this reevaluation is complete.

These check valves can be disassembled while the plant is operating. To allow for flexibility in planning for refueling outages and still meet the intent of OM Part 10, the valves will be disassembled on a reactor refueling frequency but not necessarily during refueling outages.

Alternate Testing Proposed

These valves will be placed into two groups and one valve from each group will be disassembled and inspected on a reactor refueling frequency. A different valve will be disassembled for each inspection. Valves 1-SW-108, 113 and 130 will be in one group, and valves 1-SW-262 and 268 will be in the other group. If a valve fails its inspection, the remaining valves in the group will be disassembled and inspected. The check valves will be partial stroke tested every three months. This test frequency is in accordance with Generic Letter 89-04, Position 2.

RELIEF REQUEST V-51

System : Various

Valve(s): All Containment Isolation Valves Subject to Appendix J Testing - These valves are identified by the abbreviation "CIV" under the Isolation Valve Type Column in the Valve Table.

Category: A and AC

Class :

Function: Provide Containment Isolation

OM Part 10 Code Requirements For Which Relief Is Requested

OM Part 10, Section 4.2.2.3(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in (e) above shall be declared inoperable and be either repaired or replaced.

Basis For Request

Permissible valve leakage rates are based on each valve's possible contribution to the total leakage rate for the containment system. The total containment leakage rate must be less than 0.6La as defined in Technical Specification 4.4.C. Exceeding an individual valve's permissible leakage rate may have no affect on the containment's ability to maintain an overall leakage rate less than 0.6LA.

Also, there may be plant conditions, or schedule constraints, that preclude repair or replacement of a valve when the individual leakage limit is exceeded, but the overall leakage limits for the Type C-tested valves is met. In these cases, imposing the Code requirements of repair or replacement would create an undue burden with no compensating benefit to quality and safety when the bases for leakage limits is met for the overall limit necessary to ensure containment integrity.

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 containment leakage rate will be maintained below 0.6La until the next Type C tests. No repair or replacement is necessary if the evaluation is performed. However, when the plant conditions are

RELIEF REQUEST V-51 (Cont.)

not such that a repair or replacement would adversely impact plant startup and/or continued operations, an evaluation is not appropriate.

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

OM Part 10, Sections 4.2.1.2 and 4.2.2.2 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.

However, OM Part 10, Section 6.2 does require that these valves be specifically identified by the owner. 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 Section XI 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 closed (must be less than or equal to 5.0 seconds). If either of the limiting times are exceeded, the valve fails the test.

Section XI 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
Replaced by Interim Relief Request V-48

COLD SHUTDOWN JUSTIFICATION CSV-3
Cold Shutdown Justification Withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-4

System : Auxiliary Feedwater

Valve(s): Valves affected by this justification are identified by Table CSV-4.

Category:

Class :

Function:

Cold Shutdown Justification

Except for valves 1-FW-142, 157 and 172, partial or full opening the valves in Table CSV-4 during power operation would introduce cold auxiliary feedwater to the steam generators resulting in thermal stress and possible steam generator tube degradation. Valves 1-FW-142, 157 and 172 can be full stroke tested every three months.

To test valves 1-FW-142, 157 and 172 to the closed position, flow must be established to the steam generators in order to back seat the valves on the discharge side of the non-running pumps. This test would also introduce cold auxiliary feedwater to the steam generators if performed during normal operation.

Testing Frequency

Except for valves 1-FW-142, 157 and 172, the valves in Table CSV-4 will be full stroke exercised every cold shutdown but not more frequently than once every three months. Valves 1-FW-142, 157 and 172 will be full stroke tested once every three months and tested in the closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-4 (Cont.)

TABLE CSV-4

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
1-FW-27 1-FW-58 1-FW-89	C	2	Auxiliary Feedwater Header Check at Main Feedwater Header Valves
1-FW-131 1-FW-133 1-FW-136 1-FW-138	C	2	Auxiliary Feedwater Header Check Valves at Containment Penetration
1-FW-142 1-FW-157 1-FW-172	C	3	Auxiliary Feedwater Pump Discharge Check Valves
1-FW-272 1-FW-273	C	2	Check Valves at Containment Penetration (Cross-Connect for Unit 1 Aux. Feed. from Unit 2)
1-FW-309 1-FW-310	C	2	Check Valves at Containment Penetration (Cross-Connect for Unit 1 Aux. Feed. from Unit 2)

COLD SHUTDOWN JUSTIFICATION CSV-5

System : Component Cooling

Valve(s): Valves affected by this justification are identified by Table CSV-5

Category:

Class :

Function:

Cold Shutdown Justification

These valves are located in the containment and may be normally open or closed depending on system lineup. A containment entry and manipulation of other system valves are necessary to test these valves to either the open or closed position. This is considered impractical during power operation.

Testing Frequency

The valves in Table CSV-5 will be tested in the closed position every cold shutdown but not more frequently than once every three months. Valves 1-CC-176 and 177 will be full stroke exercised every cold shutdown but not more frequently than once every three months.

TABLE CSV-5

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
1-CC-176 1-CC-177	C	3	Component Cooling to RHR Heat Exchanger Check Valves
1-CC-242 1-CC-233 1-CC-224	C	3	Component Cooling to Reactor Containment Air Recirculation Coolers

COLD SHUTDOWN JUSTIFICATION CSV-6

System : Component Cooling

Valve(s): Valves affected by this justification are identified by Table CSV-6.

Category:

Class :

Function:

Cold Shutdown Justification

To perform an operability or a fail-safe test, the component cooling lines must be isolated, thereby stopping the flow of cooling water to the Reactor Coolant Pumps. Loss of cooling water to these pumps can be damaging, even for short periods of time.

Testing Frequency

The valves in Table CSV-6 will be tested in the closed position every cold shutdown when the reactor coolant pumps are secured but not more frequently than once every three months.

TABLE CSV-6

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
1-CC-1 1-CC-58 1-CC-59	C	3	Component Cooling to Reactor Coolant Pumps
1-CC-TV-105A 1-CC-TV-105B 1-CC-TV-105C	B	3	Component Cooling from Reactor Coolant Pumps

COLD SHUTDOWN JUSTIFICATION CSV-7

System : Reactor Coolant

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

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.b(3).

Testing Frequency

These valves will be tested on approach to Cold Shutdown and testing shall not be deferred.

COLD SHUTDOWN JUSTIFICATION CSV-8

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 partial or full stroke 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-7). 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

These valves will be tested to the full open position and the closed position during the testing of the RHR pumps (refer to Relief Request P-7).

COLD SHUTDOWN JUSTIFICATION CSV-9

System : Residual Heat Removal

Valve(s): 1-RH-MOV-1700
1-RH-MOV-1701

Category: B

Class : 1

Function: RHR Suction form Reactor Coolant System

Cold Shutdown 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.

Testing Frequency

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

COLD SHUTDOWN JUSTIFICATION CSV-10

System : Residual Heat Removal

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

Category: B

Class : 1

Function: RHR Discharge to Reactor Coolant System

Cold Shutdown Justification

With the MOV shut and if its respective check valve is leaking, there is no way to determine whether or not an overpressure condition exists before opening the MOV.

If the MOV was opened and an overpressure condition did exist between the MOV and the RCS, the primary pressure of 2235 psig will be released on the Residual Heat Removal System with a relief valve setting of 600 psig. This would be an unnecessary challenge to the Residual Heat Removal System.

Since the MOV is also part of the discharge piping of an accumulator, there is a possibility of discharging an accumulator into the RHR system and disabling it. The accumulators are maintained at pressure above the normal operating or shutdown pressure of the Residual Heat Removal System. Opening of these valves would dump accumulator water into the Residual Heat Removal System. This will dilute the boron concentration of the accumulator as well as lower its level and pressure, which is a violation of Technical Specifications.

Testing Frequency

These valves will be tested to the full open position 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-LCV-1115C
1-CH-LCV-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 closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-12
Cold Shutdown Justification Withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-13

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 closed position every cold shutdown when the reactor coolant pumps are secured but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-14

System : Residual Heat Removal
Valve(s): 1-RH-FCV-1605
 1-RH-HCV-1758
Category: B
Class : 2
Function: Residual Heat Removal Exchanger flow control

Cold Shutdown Justification

These valves have no remote position indication and are located inside containment. The valves can only be exercised (partial or full stroke) and timed by locally observing stem movement. Because a containment entry is required to perform the exercise and fail-safe tests, it will be conducted every cold shutdown.

Testing Frequency

Valve 1-RH-FCV-1605 will be tested to the closed position, and valve 1-RH-HCV-1758 will be tested to the full open position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-15

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 closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-16

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 closed 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 closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-17

System : Safety Injection

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

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 1-SI-MOV-1890C with the valve in the open position. If this valve was stroked during power operation and failed in the closed position, the Low Head Safety Injection System would be rendered inoperable.

Testing Frequency

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

COLD SHUTDOWN JUSTIFICATION CSV-18

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 closed positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-19

System : Chemical and Volume Control

Valve(s): 1-CH-225 1-CH-228
 1-CH-227 1-CH-229
 1-CH-MOV-1350

Category: B (1-CH-MOV-1350, 1-CH-228) and
 C (1-CH-225, 227, 229)

Class : 2

Function: Emergency and Manual Emergency Boration Line
 Isolation Valves

Cold Shutdown 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. Under normal plant operating conditions or when the plant is shutdown, valve 1-CH-MOV-1350 can be full stroke exercised and valves 1-CH-225, 227 and 229 can be part stroked exercised with the boric acid transfer pumps set on low speed to minimize the amount of boric acid injected into the reactor coolant system. However, during power operation when the concentration of boric acid in the reactor coolant system 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.

Testing Frequency

Valve 1-CH-MOV-1350 will be full stroke exercised and 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.

Manual valve 1-CH-228 will be stroked open when the other valves in the alternate boration path are exercised. The increased level of safety gained by exercising this valve every quarter does not justify the added burden of performing a separate test just for the manual valve.

COLD SHUTDOWN JUSTIFICATION CSV-20

Replaced by Reactor Refueling Justification RRV-6

COLD SHUTDOWN JUSTIFICATION CSV-21

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 closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-22
Cold Shutdown Justification Withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-23
Replaced by Relief Request V-43

COLD SHUTDOWN JUSTIFICATION CSV-24
Cold Shutdown Justification Withdrawn

COLD SHUTDOWN JUSTIFICATION CSV-25

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 closed position during power operation.

Testing Frequency

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

COLD SHUTDOWN JUSTIFICATION CSV-26

System : Component Cooling

Valve(s): 1-CC-181
1-CC-185

Category: B (manual)

Class : 3

Function: Component Cooling Supply/Return to/from RHR Heat
Exchanger Isolation Valves

Cold Shutdown Justification

A containment entry is required to exercise these manual butterfly valves. Therefore, they will be exercised every cold shutdown.

Testing Frequency

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

COLD SHUTDOWN JUSTIFICATION CSV-27

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 closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-28

System : Feedwater

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

The bypass valves 1-FW-FCV-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, thus are passive in the closed 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. The main feedwater regulating valves will be part stroke exercised every three months during the turbine inlet valve movement test.

COLD SHUTDOWN JUSTIFICATION CSV-29

System : Safety Injection

Valve(s): 1-SI-109
1-SI-130
1-SI-147

Category: C

Class : 1

Function: SI Accumulator Discharge Isolation Check Valve

Cold Shutdown Justification

These check valves are located inside containment and are back seat tested using the installed sampling system. To ensure that all of the leakage that could pass by the check valves is collected, the accumulator discharge motor operated valves (1-SI-MOV-1865A, B and C) must be closed. However, these motor operated valves must be open and de-energized when the reactor coolant system pressure is above 1000 psig according to Technical Specification Paragraph 3.3.A.10.

Testing Frequency

The accumulator check valves will be tested to the closed position every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-30

System : Component Cooling

Valve(s): 1-CC-805

Category: C

Class : 3

Function: Charging Pump Seal Cooling Surge Tank Makeup Valve

Cold Shutdown 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 cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-31

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 closed 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 closed positions every cold shutdown but not more frequently than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-32

System : Main Steam

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

Category: C

Class : 2

Function: Main Steam Non-Return Valves

Cold Shutdown 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 inservice, 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 seat test using flow is not practical. Also, valve disassembly and inspection are not practical alternatives due to the size of the valve and the weight of the disk.

COLD SHUTDOWN JUSTIFICATION CSV-32 (Cont.)

However, an alternative exists to verify that the disk moved to the valve seat during reactor coolant system (RCS) cooldown. When the RCS temperature is between 350 °F and 195 °F during the cooldown 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, the Valve Operation Test and Evaluation System (VOTES) can be used to determine the position of the disk of the NRV. After the main steam trip valve is closed, 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 cooldown process be delayed between one to two hours to setup the instrumentation and to perform the test on each of three valves. Virginia Power owns the VOTES equipment and has personnel trained to use the equipment and interpret the results.

The VOTES consists of a force sensor permanently mounted on the valve yoke, valve switch current probes and a motor current probe. The force sensor detects the strain experienced by the yoke as the valve stem moves. Strain is converted to force. The valve switch probes determine the status of the torque and limit switches, and the open and closed bypass switches in the motor operator control circuit over the course of stem travel. To attach the switch and motor current probes, the power to the valve must be interrupted.

Testing Frequency Discussion

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

Plant cooldown procedures require the trip valve to be closed, and then the NRV stem run down onto the disk to isolate the main steam system. The VOTES testing must be performed when the NRVs are initially closed during the cooldown to accurately assess the piston-disk assembly's as-found position. As indicated above, the VOTES test will delay the cooldown process from between one to two hours. Some cold shutdown outages are forced outages that result from exceeding a Technical Specification limit such as unidentified RCS leakage. The emphasis in a forced outage cooldown is to reach cold shutdown as rapidly as possible and to mitigate the cause of the forced outage. Stopping this process to perform the VOTES test would complicate the operators task to

COLD SHUTDOWN JUSTIFICATION CSV-32 (Cont.)

secure the plant and may reduce plant safety. However, during planned cold shutdowns where there are no mitigating circumstances, there is adequate time to notify the test personnel, carry the equipment into the field and perform the test.

There is no evidence in the valve history that a valve has stuck in the partial open position. 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.

Testing Frequency

The VOTES test described above will be performed on each main steam non-return valve during the cooldown process going into each planned cold shutdown. This test will not be performed more often than once every three months.

COLD SHUTDOWN JUSTIFICATION CSV-33

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

This valve will be exercised to the open and closed positions during cold shutdowns when the reactor coolant system is not pressurized but not more frequently than once every three months.

4.7 VALVE TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

OM Part 10, Sections 4.2.1.2 and 4.2.2.2 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, OM Part 10, Section 6.2 does require that these valves be specifically identified by the owner. The reactor refueling justifications identify and provide the technical basis for valves exercised during cold shutdown but not during normal operation.

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 partially stroked every three months and 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

These valves cannot be full stroke exercised during plant power operation. The only full flow path is into the Reactor Coolant System and Low Head Safety Injection pumps cannot overcome Reactor Coolant System operating pressure. These valves will be partially stroked every three months through the pump recirculation line. During cold shutdown, the Reactor Coolant System pressure still prevents full flow testing of the check valve. During cold shutdown, the charging flow could cause an overpressurization condition.

Testing valves 1-SI-50 and 58 to the closed 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 valve. This test can take up to a hour to complete and places the unit into a LCO per Technical Specification 3.3 if performed during normal operation.

Testing Frequency

These valves will be partially stroked every three months and full stroked every refueling.

Valves 1-SI-50 and 58 will be tested to the closed position every cold shutdown.

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

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
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

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 partial or full 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

Non-intrusive diagnostic techniques will be used to determine that the check valves open to the full open position. A sampling program will be applied to the non-intrusive techniques as described in Relief Request V-26.

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 backseat test performed. These valves are located inside the containment and would require a subatmospheric containment entry to perform the backseat test if the reactor is above 200°F.

REACTOR REFUELING JUSTIFICATION RRV-4 (Cont.)

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 OM Part 10, Paragraph 4.2.1.2(f), "valves full-stroke exercised at cold shutdowns shall be exercised during each cold shutdown, except as specified in (g) below. Such exercise is not required if the time period since the previous full-stroke exercise is less than 3 months." Paragraph (g) 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 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 prior to startup. However, it is not the intent of this Part 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 backseat test. When compared to the Code requirements for a backseat 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.

REACTOR REFUELING JUSTIFICATION RRV-4 (Cont.)

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 backseat test performed if the reactor is above 200°F. Therefore, it is impractical to perform a closure test every quarter.

A leakage test will be performed on each of the three pairs of valves. This test will be performed on the same test frequency as the pressure isolation valves discussed above (i.e., per Technical Specification Table 4.1-2A). Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C. When compared to a backseat test performed every cold shutdown, the combination of the test frequency described in Technical Specification Table 4.1-2A and leakage testing is an alternative that provides an acceptable level of quality and safety.

Close Test Discussion for 1-SI-235, 236 and 237

To verify closure for valves 1-SI-235, 236 and 237, 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.

In lieu of performing a backseat test on each of these valves every cold shutdown, a leakage test will be performed on each valve and the leakage of each valve will be compared to a limit. This test will be performed on the same test frequency as the pressure isolation valves discussed above (i.e., per Technical Specification Table 4.1-2A). Note that there is no specified permissible accident leakage limit for these valves. Therefore, these valves are Category C. When compared to a backseat test performed every cold shutdown, the combination of the test frequency described in Technical Specification Table 4.1-2A and leakage testing is an alternative that provides an acceptable level of quality and safety.

REACTOR REFUELING JUSTIFICATION RRV-4 (Cont.)

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.

Using low head pump flow, the cold leg injection valves 1-SI-79, 82, 85, 241, 242 and 243 will be acoustically monitored 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 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 Closed Position

Valves 1-SI-79, 82, 85, 241, 242 and 243 will be tested to the closed 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 at the frequency required by Technical Specification Table 4.1-2A. 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 at the frequency required by Technical Specification Table 4.1-2A.

The remaining 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 isolation for the safety injection flow paths is provided by the upstream and downstream valves. For each of these valves, there are normally closed motor operated valves located upstream and two check valves in series located downstream. The upstream and downstream valves are tested for closure.

REACTOR REFUELING JUSTIFICATION RRV-4 (Cont.)

TABLE RRV-4

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
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 suction 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. There are no vents or pressure instrumentation upstream of the valve; therefore, the valve cannot be backseat tested with flow.

Testing Frequency

These valves will partial flow tested during every cold shutdown and full flow tested during every reactor refueling.

Valve 1-SI-25 will be disassembled and inspected every refueling outage to verify closure.

REACTOR REFUELING JUSTIFICATION RRV-6

System : Various

Valve(s): Valves affected by this justification are identified by Table RRV-6.

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

Testing Frequency

Exercise to the closed position every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-6 (Cont.)

TABLE REACTOR RRV-6

<u>Valve</u>	<u>Category</u>	<u>Class</u>	<u>Function</u>
1-CH-309	AC	2	Normal Charging Isolation
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 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 which 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^oF 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 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.

REACTOR REFUELING JUSTIFICATION RRV-7 (Cont.)

Testing Frequency

Exercise to the closed position every reactor refueling.

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

During normal operation, this valve cannot be isolated to perform a back pressure test because normal letdown and charging flow would be interrupted. Also, if the valve was isolated during normal operation, the charging pumps would have to be secured.

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.

Testing Frequency

Exercise to the closed position 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 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.

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

Section XI Code Requirements
Which Cannot Be Met

Exercise valves every three months.

Basis For Alternate Testing

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.

NON-CODE ALTERNATIVE TESTING VNC-1 (Cont.)

Alternative 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.

NON-CODE ALTERNATIVE TESTING VNC-2

Non-Code Alternative Testing Withdrawn

NON-CODE ALTERNATIVE TESTING VNC-3

System : Emergency Generator

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

OM Part 10 Code Requirements
Which Cannot 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

NON-CODE ALTERNATIVE TESTING VNC-3 (Cont.)

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.

Alternative 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-4

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

OM Part 10 Code Requirements
Which Cannot 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 Proposed

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).

5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

A record of each pump will be maintained in accordance with OM Part 6, Section 7.1 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' acceptance test report if available,
- 3) a copy of the pump manufacturer' operating limits.

A record of inservice test plans will be maintained in accordance with OM Part 6, Section 7.2 that includes the following:

- 1) the hydraulic circuit to be used,
- 2) the location and type of measurement for the required test parameters,
- 3) the reference values 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 OM Part 6, Section 7.3 that includes the following:

- 1) pump identification,
- 2) date of test,
- 3) reason for test (e.g., post maintenance, routine inservice test establishing reference values, etc.),
- 4) values of measured parameters,
- 5) identification of instruments used,

- 6) comparisons with allowable ranges of test values and analysis of deviations,
- 7) requirement for corrective action,
- 8) evaluation and justification for changes to reference values and
- 9) signature of the person or persons responsible for conducting and analyzing the test.

A record of corrective action will be maintained in accordance with OM Part 6, Section 7.4 that includes a summary of the corrections made, the subsequent inservice tests and confirmation of operation adequacy, and the signature of the individual 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 Authorized Nuclear Inservice Inspector and the NRC.

5.2 VALVE INSERVICE TESTING PROGRAM

A record of each valve will be maintained in accordance with OM Part 10, Section 6.1 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's 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 OM Part 10, Section 6.2, Test Plans.

A record of test results will be maintained in accordance with OM Part 10, Section 6.3 that includes the following:

- 1) valve identification,
- 2) date of test,
- 3) reason for test (e.g., post maintenance, routine inservice test establishing reference values, etc.),
- 4) values of measured parameters,
- 5) identification of instruments used,
- 6) comparisons with allowable ranges of test values and analysis of deviations,
- 7) requirement for corrective action and
- 8) signature of the person or persons responsible for conducting and analyzing the test.

A record of corrective action will be maintained in accordance with OM Part 10, Section 6.4 that includes a summary of the corrections made, the subsequent inservice tests and confirmation of operation adequacy, and the signature of the individual responsible for the corrective action and verification of results.

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 Authorized Nuclear Inservice Inspector and
the NRC.

6.0 QUALITY ASSURANCE PROGRAM

The Pump and Valve Inservice Test Program activities will be conducted in accordance with the Nuclear Operations Department Standards Manual and Technical Specifications for Surry Power Station.