VIRGINIA ELECTRIC AND POWER COMPANY RICHMOND, VIRGINIA 23261

May 1, 2013

U.S. Nuclear Regulatory Commission Attention: Document Control Desk Washington, D.C. 20555 Serial No. 13-268 NL&OS/GDM R1 Docket Nos. 50-280/281 License Nos. DPR-32/37

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

Pursuant to 10 CFR 50.55a(f)(4)(ii), Virginia Electric and Power Company (Dominion) submits the Surry Power Station (Surry) Units 1 and 2 Inservice Testing (IST) Programs for Pumps and Valves for the fifth ten-year IST interval. 10 CFR 50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants and includes the 2004 Edition, the 2005 Addenda and the 2006 Addenda. The Code reference became effective on July 21, 2011 and applies to the fifth IST interval for Surry Units 1 and 2. The IST Programs for the fifth interval were updated to comply with the appropriate revisions of the ASME OM Code. The IST Programs and associated summary of changes for Surry Units 1 and 2 are included in Enclosures 1 and 2, respectively. The fifth IST interval starts on May 10, 2014 for both units.

The relief requests contained in the Surry Units 1 and 2 fifth interval IST Programs require NRC review and approval before they can be implemented. For Surry Unit 1, there is one relief request associated with the general administration of the IST Program (G-1), ten relief requests for pumps (P-1 through P-10), and one relief request for valves (V-1). For Surry Unit 2, there is one relief request associated with the general administration of the IST Program (G-1), seven relief requests for pumps (P-1 through P-7), and one relief request for valves (V-1). A summary of the Surry Units 1 and 2 relief requests, as well as the relief requests themselves, are included in Enclosures 1 and 2, respectively.

Dominion requests NRC approval of the Surry Units 1 and 2 IST Programs' relief requests by April 30, 2014. The remaining portions of the IST Programs are within the provisions of the Code and therefore do not require NRC approval for implementation.

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If you have any questions or require additional information, please contact Ms. Candee Lovett at (757) 365-2178.

Respectfully,

NGRO

N. L. Lane Site Vice President - Surry Power Station

Commitments made in this letter: None

Enclosures:

- 1. Surry Power Station Unit 1, Fifth Interval Inservice Testing Program and Associated Relief Requests
- 2. Surry Power Station Unit 2, Fifth Interval Inservice Testing Program and Associated Relief Requests

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ENCLOSURE 1

SURRY POWER STATION UNIT 1 FIFTH INTERVAL INSERVICE TESTING PROGRAM

- Attachment 1 Summary of Proposed Relief Requests
- Attachment 2 Proposed Relief Requests

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- Attachment 3 Inservice Testing Program Fifth Testing Interval Update Summary
- Attachment 4 Inservice Testing Program Plan for Pumps and Valves, Fifth Testing Interval

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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ATTACHMENT 1

SURRY POWER STATION UNIT 1 INSERVICE TESTING PROGRAM

SUMMARY OF PROPOSED RELIEF REQUESTS FOR THE FIFTH 10 YEAR TESTING INTERVAL

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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		INSERVICE IARY OF PRO	VER STATION UNIT 1 TESTING PROGRAM DPOSED RELIEF REQUESTS DYEAR TESTING INTERVAL
Interval 5 Relief Request	Relief Request Description	Interval 4 Relief Request	Comments
G-1	General program relief to use OMN-20, which allows for the application of a 25% grace period when scheduling tests.	None	Other plants have submitted similar relief requests and at least one plant (Quad Cities) has received NRC approval. This issue was discussed during the last ASME OM Code/IST Owners Group meetings held in December 2012. The NRC representative discussed Code Case OMN-20, which allows for a 25% grace period when performing IST tests. Having this Code Case will solve the issue with TS 3.0.2 and TS 4.0.2, which allow a 25% grace for TS Surveillance Requirements (SRs), but not for IST tests that do not have an associated SR. NRC stated that several utilities have already requested relief to implement the draft Code Case. A relief request will be submitted using OMN-20 for the SPS Interval 5 update.
P-1	Allows for a base reference value of 0.05 ips for smooth running pumps.	P-1	North Anna received NRC approval for a similar relief request. Several plants have received NRC approval for similar relief requests within the last 3 years.
P-2	Relief from testing the RHR pumps every quarter.	P-2	North Anna received NRC approval for a similar relief request. There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containing after containment sub-atmospheric sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request for the following reasons.
			 Performing the pump test during plant cool down interrupts the cool down process and distracts the Operators from their primary task of safely bringing the plant to a cold shutdown condition. The RCS water temperature is near 200°F when performing the pump test at the "first practical opportunity" which is much higher than when performing th pump test following maintenance with the water temperature near 80°F. The 100°F difference in water temperature affects the comparison of differential pressure values measured at hot conditions to reference values measured at cold conditions. This temperature difference must be accounted for in the temperature.

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		INSERVICE IARY OF PRO	VER STATION UNIT 1 TESTING PROGRAM OPOSED RELIEF REQUESTS O YEAR TESTING INTERVAL		
Interval 5 Relief Request	Relief Request Description	Interval 4 Relief Request	Comments		
			 Performing the pump test "at the first practical opportunity" provides no benefits in terms of testing at the "as found condition" because the pump has already been operating for about 6 to 10 hours before the test can be performed. The pumps will be operating at cold conditions for a large majority of the time the pumps are needed. 		
P-3	Relief from the Code required 2% accuracy for the boric acid transfer pump suction pressure instruments (current accuracy is 3%).	P-6	Two other plants received NRC approval for similar relief requests.		
P-4	Relief from the Code required analog pressure indicator full scale being less than or equal to 3 times the reference value for the charging pump cooling water pumps.	P-7	One other plant received NRC approval for a similar relief request.		
P-5	Relief from the Code required reference value for flow rate for the comprehensive pump test being within 20% of pump design flow rate for the CS pumps.	P-8	North Anna received NRC approval for a similar relief request. The relief request for the CS pumps (P-5) only applies to Unit 1 because the Unit 1 pumps are flowing just below (1596 gpm) the required flow for the comprehensive pump test which is within 20% (1600 gpm) of the accident flow rate (2000 gpm). Therefore, there is a need for relief. The Unit 2 pumps flow within 20% of the accident flow rate by a wide margin (1671 gpm for the A pump and 1681 gpm for the B pump) and relief is not needed.		
P-6	Relief from having to use the 1.03% upper action limit for the comprehensive tests. The upper required action limit is increased to 1.06% per Code Case OMN-19. Applies to all ASME Classed pumps except the CS pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the current test loop configuration.	None	There are no submitted or approved relief requests for other plants that are simil to P-6. For pumps that have a specific design basis accident flow rate in the credited safety analysis (e.g., technical specifications, technical requirements program, or updated safety analysis) the NRC expects that the Owner also perform a pump periodic verification (PPV) test. A PPV test is a test that verifies a pump can meet the required (differential or discharge) pressure as applicable, at its highest design basis accident flow rate.		

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		INSERVICE MARY OF PRO	VER STATION UNIT 1 TESTING PROGRAM OPOSED RELIEF REQUESTS O YEAR TESTING INTERVAL
Interval 5 Relief Request	Relief Request Description	Interval 4 Relief Request	Comments
P-7	Allows for the use of a pump curve for testing the emergency SW pumps per ASME OM Code Case OMN-16.	P-3	North Anna received NRC approval for a similar relief request. The Interval 4 relief request used Code Case OMN-9, Use of a Pump Curve for Testing for the emergency SW pumps. OMN-9 is being replaced by OMN-16 of the same title for plants subject to latter editions of the Code. Code Case OMN-16 is being included in Revision 1 to RG 1.192, which is the RG used by the NRC to approve code cases for use without a relief request. Revision 1 is expected to be approved for use by the NRC in the second quarter 2014. The decision was made to go forward with a relief requests using Code Case OMN-16 in case the RG is not approved by 5/10/2014.
P-8	Allows for the use of a pump curve for testing the main control room air condition chilled water VS pumps per ASME OM Code Case OMN-16.	P-4	Refer to discussion for P-7
P-9	Allows for the use of a pump curve for testing the main component cooling CC pumps per ASME OM Code Case OMN-16.	P-5	Refer to discussion for P-7
P-10	Allows for the use of a pump curve for the quarterly testing the charging pumps per ASME OM Code Case OMN-16.	None	 North Anna received NRC approval for a relief request to use OMN-9. P-10 will be added for the quarterly test for the charging pumps. The basis for the relief is as follows. Plant conditions may not be the same as when the reference values were established. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system.
V-1	Allows a RWST isolation valve to exceed its leak limit if overall leakage to the RWST is within the overall limit.	V-2	North Anna received NRC approval for a similar relief request.

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ATTACHMENT 2

SURRY POWER STATION UNIT 1 INSERVICE TESTING PROGRAM

PROPOSED RELIEF REQUESTS FOR THE FIFTH 10 YEAR TESTING INTERVAL

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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RELIEF REQUEST G-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(ii), Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

All Pumps and Valves contained within the Inservice Testing Program scope

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

Code Paragraph	Description		
ISTA-3120(a)	"The frequency for the inservice testing shall be in		
	accordance with the requirements of Section 1ST."		
ISTB-3400	Frequency of Inservice Tests		
ISTC-3510	Exercising Test Frequency		
ISTC-3540	Manual Valves		
ISTC-3630(a)	Frequency		
ISTC-3700	Position Verification Testing		
ISTC-5221 (c)(3)	"At least one valve from each group shall be		
	disassembled and examined at each refueling		
	outage; all valves in a group shall be disassembled		
	and examined at least once every 8 years."		
Appendix I, I-1320	Test Frequencies, Class 1 Pressure Relief Valves		
Appendix I, I-1330	Test Frequencies, Class 1 Non-reclosing Pressure		
	Relief Devices		
Appendix I, I-1340	Test Frequencies - Class 1 Pressure Relief Valves		
· · · · · · · · · · · · · · · · · · ·	that are used for Thermal Relief Application		
Appendix I, I-1350	Test Frequencies - Class 2 and 3 Pressure Relief		
	Valves		
Appendix I, I-1360	Test Frequencies - Class 2 and 3 Non-reclosing		
	Pressure Relief Devices		
Appendix 1, I-1370	Test Frequencies - Class 2 and 3 Primary		
	Containment Vacuum Relief Valves		

RELIEF REQUEST G-1 (Cont.)

Code Paragraph	Description			
Appendix I, I-1380	Test Frequencies - Class 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves			
Appendix I, I-1390	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application			
Appendix II, II-4000(a)(1)	Performance Improvement Activities Interval			
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities Interval			

4.0 Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section 1ST establishes the inservice test frequency for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in the Table 3.2 of NUREG 1482, Revision 1) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow for a less than or equal to 25% extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (TS 4.0.2). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies irrespective of allowances provided under TS Administrative Controls (i.e., TS 6.4.I, "Inservice Testing Program," invokes TS 4.0.2 for various OM Code frequencies).

The lack of a tolerance band on the ASME OM Code inservice test frequency restricts operational flexibility. There may be a conflict where a surveillance test could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after a plant condition or associated Limiting Condition for Operation (LCO) is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can be and should be performed.

RELIEF REQUEST G-1 (Cont.)

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in TS 4.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

Thus, just as with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

5.0 Proposed Alternative and Bases for Use

Code Case OMN-20 is included in the ASME OM Code, 2009 Edition and will be used as the alternative to the frequencies of the ASME OM Code.

The requirements of Code Case OMN-20 are described below.

ASME OM Division: 1 Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

- a. Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in the table below. The specified time period between tests may be reduced or extended as follows:
 - 1) For periods specified as less than 2 years, the period may be extended by up to 25% for any given test.
 - 2) For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
 - 3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

RELIEF REQUEST G-1 (Cont.)

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) and other less than two year test frequencies not specified in the table below.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, *Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants,* as Subsection ISTD contains its own rules for period extensions.

Frequency	Specified Time Period Between Tests		
Quarterly (or every 3 months)	92 days		
Semiannually (or every 6 months)	184 days		
Annually (or every year)	366 days		
x Years	x calendar years where 'x' is a whole		
	number of years ≥ 2		

 b. Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by ASME OM Division: 1 Section IST 2009 Edition through OMa-2011 Addenda and earlier editions and addenda of ASME OM Code.

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request G-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

The following relief request for another plant that is similar to Relief Request G-1 was approved by the NRC.

Request Number RV-01 for Quad Cities Units 1 and 2 was approved by the NRC by letter dated 2/14/2013 (TAC Nos. ME7981 through ME7988, ME7990 through ME7995.)

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RELIEF REQUEST G-1 (Cont.)

8.0 <u>References</u>

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- 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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Surry TS Paragraph 4.0.2
 Surry TS 6.4.I, Inservice Testing Program

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RELIEF REQUEST P-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-1.1

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3300, "Reference Values"

ISTB-3300(a) requires that initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, "Preservice Testing," or from the results of the first inservice test.

ISTB-3300(d) requires that reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.

ISTB-3300(f) requires that all subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ISTB-5120, "Inservice Testing" (Centrifugal Pumps, Except Vertical Line Shaft Centrifugal Pumps)

ISTB-5121(e) and ISTB-5123(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5121-1. For example, if vibration exceeds either 6Vr, or 0.7 in/sec, the pump is in the required action range.

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RELIEF REQUEST P-1 (Cont.)

ISTB-5220, "Inservice Testing" (Vertical Line Shaft Centrifugal Pumps)

ISTB-5221(e) and ISTB-5223(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5221-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5221-1.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

The pumps listed in Table P-1.1 tend to be smooth running pumps. Each pump listed in Table P-1.1 has at least one vibration reference value (Vr) that is currently less than 0.05 inches per second (ips). Small values for Vr produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5121-1 and ISTB-5221-1 as less than or equal to 2.5Vr. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action if the measured vibration parameter exceeds this acceptable range.

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

To avoid unnecessary corrective action, a minimum value for Vr of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1.1 where the measured reference value is less than 0.05 ips.

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

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

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RELIEF REQUEST P-1 (Cont.)

- vibration monitoring and analysis beyond that required by ISTB, and
- oil sampling and analysis where applicable (e.g., for pumps with sufficiently large oil reservoirs).

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

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

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-1.1, if a measured reference value is below 0.05 ips for a particular vibration measurement location, then subsequent test results for that location may be compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-1 requests relief from the specific ISTB requirements identified in this request.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

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RELIEF REQUEST P-1 (Cont.)

7.0 Precedents

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to Relief Request P-1 were approved by the NRC.

Pump Relief Request P-1 for North Anna 1 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777).

Pump Relief Request PRR8 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

Pump Relief Request PRR8 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-1 (Cont.)

Table P-1.1

Pump		Code	OM			Pump Speed
Groups	System	Class	Group	Description	Pump Type	(rpm)
1-CC-P-1A 1-CC-P-1B	Component Cooling	3	A	Component Cooling Water Pumps	Centrifugal	1185
1-CC-P-2A	Component Cooling	3	A	Component Cooling Water Pump to Charging Pump	Centrifugal	3500
1-CH-P-1B 1-CH-P-1C	Chemical and Volume Control/Safety Injection	2	A	High Head Safety Injection/Charging Pump	Centrifugal	6018
1-CH-P-2A 1-CH-P-2B	Chemical and Volume Control	2	A	Boric Acid Transfer Pumps	Centrifugal	3500
1-FW-P-3B	Auxiliary Feedwater	3	В	Auxiliary Feedwater Motor Driven Pump	Centrifugal	3560
1-RH-P-1A 1-RH-P-1B	Residual Heat Removal	2	A	Residual Heat Removal Pump	Centrifugal	1780
1-SW-P-10A 1-SW-P-10B	Service Water	3	A	Service Water Pump to Charging Pump	Centrifugal	3500
1-VS-P-1B 1-VS-P-1C	Ventilation	3	A	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	3550
1-VS-P-1D 1-VS-P-1E	Ventilation	3	A	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	1750
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C	Ventilation	3	A	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	3500
1-VS-P-2D 1-VS-P-2E	Ventilation	3	A	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	3535

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RELIEF REQUEST P-2

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i). Code requirement is impractical.

Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Residual Heat Removal

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3400, "Frequency of Inservice Tests," states: "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

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

4.0 Reason for Request

ISTB-3400 and Table ISTB-3400-1

The residual heat removal (RHR) pumps are located inside containment. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RCS is maintained at 2235 psig and the containment atmosphere is maintained at sub-atmospheric pressure during normal operation. The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 460 psig. Therefore, testing the RHR pumps during normal operation is not possible.

RELIEF REQUEST P-2 (Cont.)

5.0 Proposed Alternative and Bases for Use

ISTB-3400 and Table ISTB-3400-1

These pumps will be tested every cold shutdown outage and reactor refueling outage, unless the pump has been tested within the previous three months. (During back-to-back cold shutdown or refueling outages, the test period remains valid for three months following each test, and no additional periodic testing needs to be performed within this three month test period.) For a cold shutdown or reactor refueling that extends longer than three months, the pumps will be tested every three months in accordance with ISTB 3400-1.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-2 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC4251 and MC4252)" dated September 28, 2004.

The following relief requests for other plants that are similar to Relief Request P-2 were approved by the NRC.

Pump Relief Request P-2 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR7 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131) and applies to ISTB-3400 and Table ISTB-3400-1.

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RELIEF REQUEST P-2 (Cont.)

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-3

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i). Code requirement is impractical. Alternative provides acceptable level of guality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 **Reason for Request**

Table ISTB-3500-1

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

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RELIEF REQUEST P-3 (Cont.)

<u>ISTB-3510(b)(1)</u>

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

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

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

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

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

Computing the Code allowed error for differential pressure for an inlet pressure gauge with 2% accuracy and a 0 to 5 psig range and a discharge pressure instrument with 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%.

RELIEF REQUEST P-3 (Cont.)

5.0 Proposed Alternative and Bases for Use

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

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-3 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to portions of P-3 were approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441). Note that Relief Request PRR-03 only applies to the full scale range requirements in ISTB-3510(b)(1), and not to the instrument accuracy requirements in Table ISTB-3500-1.

Pump Relief Request PRR006 for Fermi 2 was approved by the NRC by letter dated 76/2010 (TAC NOS. ME2548, ME2549, ME2551) and applies to Table ISTB-3510-1.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-4

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Component Cooling Water

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

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

RELIEF REQUEST P-4 (Cont.)

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

5.0 Proposed Alternative and Bases for Use

Inlet pressure for the Group A tests will be measured with gauges that have a full-scale of 0 to 3.5 psig.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to portions of P-4 was approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-5

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Containment Spray

Group: B

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

The test loop for the containment spray pumps is shown in Figure P-5.1. The containment spray pumps take suction from the refueling water storage tank (RWST) and discharge back to the RWST. With this test loop, it is difficult to consistently achieve reference flow rates that are within 20% of the pump design flow rate of 2000 gpm. Therefore, relief from the Code requirement is requested for Surry Unit 1.

RELIEF REQUEST P-5 (Cont.)

Pump Design Flow Rate Basis

The containment spray system resistance limits a single pump delivery flow to 2000 gpm at 238.6 total developed head (TDH) in feet. This TDH corresponds to the accident analysis conditions when a containment spray pump starts and is subject to its most limiting operating conditions. Specifically, the Surry accident analysis assumes a minimum pump flow rate of 2000 gpm when the RWST, which is the containment spray suction source, is at the Technical Specifications minimum allowable level and the containment is at the design pressure of 45 psig.

As containment pressure decreases during a design basis accident following spray actuation, the containment spray pump TDH will decrease and the flow will increase above 2000 gpm as the pump operating point moves out on the pump curve. The pump response along the pump curve as modeled in the accident analysis is for a degraded pump. The actual pump head performance at 1600 gpm (the approximate test flow rate) is well above the corresponding head of the accident analysis degraded pump curve requirement.

A model of the containment spray system hydraulic circuit for each pump has confirmed the limiting accident analysis assumptions for containment spray pump flow versus head.

An additional consideration is that the containment spray pumps are expected to operate for less than 2 hours after a design basis accident. Accident analyses demonstrate that the RWST is exhausted quickly, depending on the number of containment spray and safety injection pumps that are running. The operators stop the containment spray pumps when RWST level reaches less than 3% indication.

Surry has determined that the containment spray pump design flow rate is 2000 gpm based on the plant safety analyses. The Code requires that the containment spray pump flow be tested within 80% of the design flow rate, or 1600 gpm. The average test flow rate for tests conducted since 2004 is 1593 gpm for Unit 1. The containment spray system is a fixed resistance system and the test flow rates tend to vary several gpm based on initial RWST level. Although the Unit 1 pumps have met the Code requirements, there are tests where 1600 gpm cannot be achieved.

RELIEF REQUEST P-5 (Cont.)

Pre-Operational Testing

During the construction period, the containment spray headers were fitted with blind flanges that allowed the connection of temporary drain lines for initial testing of the subsystem. After the subsystem was completely installed, temporary connections between the spray headers were made using blind flanges on the spray headers, and pipe plugs were placed in the spray nozzle sockets. The containment spray pumps were started and operated over a range of flows, circulating water through the spray header supply line to the spray headers, out the temporary drain connections and to the opposite spray headers. The water was then directed to the RWST through the 4" recirculation line. Although the preoperational test did not produce full flow conditions, it provided a full-system capability test and demonstrated that the pumps were operating on the manufacturer pump curve. It also flushed the system to remove any particulate matter that could plug the spray nozzles at a future time. At the completion of this test, the temporary drain connections were removed, the blind flanges replaced, the pipe plugs removed, the nozzle pipe nipple inspected, and the spray nozzles installed.

Additional Full Flow Testing

In addition to the pre-operational testing performed on the containment spray system, a special RWST/Chemical Addition Tank draw down test was performed on April 30, 1980 using pump 2-CS-P-1A at flow rates substantially greater than the current achievable test flow rates. The purpose of the draw down test was to validate the analytical model used to perform the Surry site boundary dose analysis. Temporary 8" discharge piping was installed from the bonnet of check valve 2-CS-13, located downstream of the pump and inside containment at elevation 15' 9", to the reactor cavity at elevation 48' 1". Flow rates up to 2133 gpm were achieved during the test. This test demonstrates that the containment spray pump 2-CS-P-1A has been operated at design flow conditions in its installed configuration. The four containment spray pumps on Surry Units 1 and 2 are essentially identical, so the conclusion from the Unit 2 containment spray pump test that pump 2-CS-P-1A can achieve the design flow rate is applicable to the Unit 1 pumps.

RELIEF REQUEST P-5 (Cont.)

Surry Predictive Maintenance Program

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

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

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

Detection of Pump Degradation

Testing the containment spray pumps at or near 1600 gpm will detect degradation in performance and verify that the pumps are operating acceptably. The 1600 gpm point (50% of the point of best efficiency of approximately 3200 gpm) is in a portion of the pump curve where degradation will be detected. Also, there is significant margin available above the minimum acceptable pump curve when testing the pump on the test loop. For pump 1-CS-P-1A, the margin is approximately 20 feet of TDH and for pump 1-CS-P-1B the margin is approximately 18 feet. A decrease in the available margin is detectable before the pump performance becomes unacceptable.

Figure P-5.2 shows the nominal vendor pump curve for 1-CS-P-1A, a typical test point, the minimum test point below which is unacceptable performance, and the design point (2000 gpm at 238.6 feet TDH), and Figure P-8.3 shows the same information for 1-CS-P-1B. The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

A comprehensive test reference flow rate will be established for each pump at or near 80% of the pump design flow rate but not less than 76% of design flow rate (1520 gpm).

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RELIEF REQUEST P-5 (Cont.)

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

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Unit 1 – American Society of Mechanical Engineers Inservice Testing Program Fourth 10-Year Interval Request for Revised Relief P-8 (TAC NO. MC6528)" dated April 8, 2005.

The following relief requests for other plants that are similar to portions of P-5 were approved by the NRC.

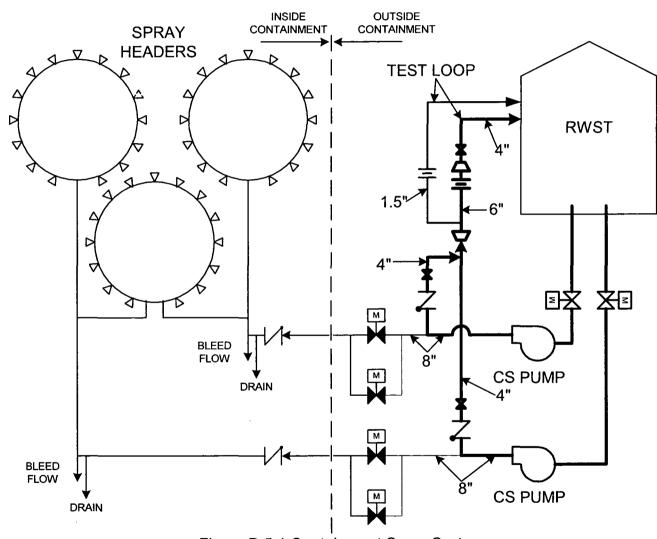
Pump Relief Request P-6 for North Anna 1 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777) and applies to ISTB-3300(e)(1).

Pump Relief Request PRR11 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-5 (Cont.)

Figure P-5.1 Containment Spray System

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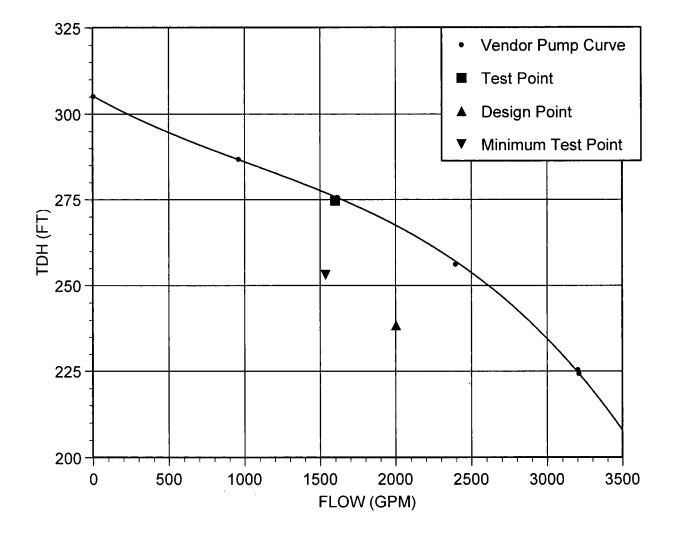


Figure P-5.2 Containment Spray Pump 1-CS-P-1A

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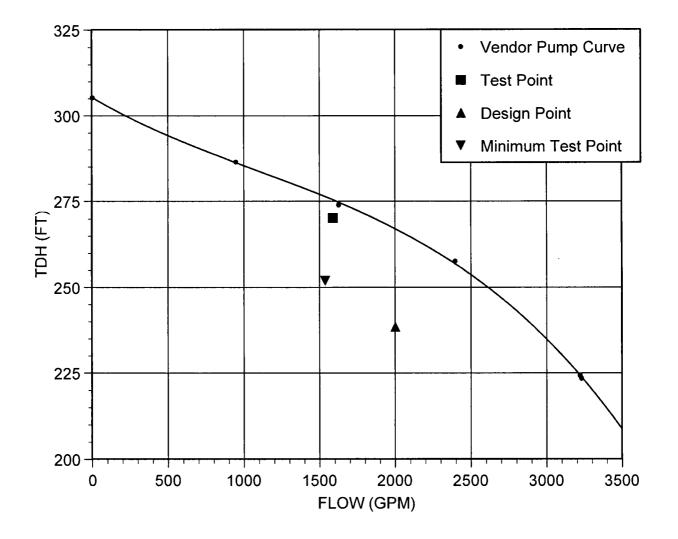


Figure P-5.3 Containment Spray Pump 1-CS-P-1B

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RELIEF REQUEST P-6

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-6.1.

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-5123, "Comprehensive Test Procedure" refers to Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

ISTB-5223, "Comprehensive Test Procedure" refers to Table ISTB-5221-1, "Vertical Line Shaft Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

For some pump tests, Surry Power Station has had difficulty implementing the upper required action range limit of 1.03% above the established hydraulic parameter reference value for the comprehensive pump test. The difficulty arises when normal data scatter yields (1) a low measured reference value, and (2) high measured values for subsequent inservice tests. In these cases, some of the test data trend high near the upper required action range limit and may exceed the upper limit on occasion. The problem can be more severe for pumps with low differential pressures (50 psid or less) due to the smaller acceptable range.

RELIEF REQUEST P-6 (Cont.)

5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-6.1, an upper required action limit of 1.06% times the reference value will be applied to the comprehensive pump test in accordance with ASME OM Code Case OMN-19, Alternative Upper Limit for the Comprehensive Pump Test. Also, for pumps that have a design basis accident flow rate, a pump periodic verification (PPV) test will be performed. Table P-6.1 identifies the pumps that have a design basis accident flow rate and indicates that a pump periodic verification test will be performed for these pumps.

Table P-6.1 includes all of the ASME Code Class pumps in the Surry IST program except for the containment spray (CS) pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the existing test loop configuration. Therefore, the upper limit of 1.03% times the reference value will still be applied to the comprehensive pump test for the CS pumps. The reason the remaining pumps are included in the relief request is that data scatter can affect future tests for any of these pumps.

The following requirements shall be applied to the PPV test.

- 1) Apply the PPV test to pumps with a design basis accident flow rate as identified in Table P-6.1.
- 2) Performed the PPV test at least once every 2 years.
- 3) Determine if a PPV test is required before declaring a pump operable following replacement, repair, or maintenance on the pump.
- 4) Declared the pump inoperable if the PPV test flow rate and associated differential pressure cannot be achieved.
- 5) Maintain the necessary records for PPV test, including the applicable test parameters (e.g., flow rate and the associated differential pressure and speed for variable speed pumps) and their basis.
- 6) Account for the PPV test instrument accuracies in the test acceptance criteria.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 and ISTB-5223, and Table ISTB-5121-1 and Table ISTB-5221-1 as described above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-6 requests relief from the specific ISTB requirements identified in this request.

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RELIEF REQUEST P-6 (Cont.)

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-6 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

None

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-6 (Cont.)

Table P-6.1

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-CC-P-1A 1-CC-P-1B	Component Cooling	3	Component Cooling Water Pumps	Centrifugal	None	No
1-CC-P-2A 1-CC-P-2B	Component Cooling	3	Component Cooling Water Pump to Charging Pump	Centrifugal	30	Yes
1-CH-P-1A 1-CH-P-1B 1-CH-P-1C	Chemical and Volume Control/Safety Injection	2	High Head Safety Injection/Charging Pump	Centrifugal	436	Yes
1-CH-P-2A 1-CH-P-2B	Chemical and Volume Control	2	Boric Acid Transfer Pumps	Centrifugal	None	No
1-FW-P-2	Auxiliary Feedwater	3	Auxiliary Feedwater Turbine Driven Pump	Centrifugal	400	Yes
1-FW-P-3A 1-FW-P-3B	Auxiliary Feedwater	3	Auxiliary Feedwater Motor Driven Pump	Centrifugal	300	Yes
1-RH-P-1A 1-RH-P-1B	Residual Heat Removal	2	Residual Heat Removal Pump	Centrifugal	None	No
1-RS-P-1A 1-RS-P-1B	Recirculation Spray	3	Inside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	3100	Yes
1-RS-P-2A 1-RS-P-2B	Recirculation Spray	3	Outside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	2900	Yes
1-SI-P-1A 1-SI-P-1B	Safety Injection	3	Low Head Safety Injection Pump	Vertical Line Shaft Centrifugal	2901	Yes

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RELIEF REQUEST P-6 (Cont.)

Table P-6.1 (Cont.)

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Service Water	3	Emergency Service Water Pump	Vertical Line Shaft Centrifugal	14550	Yes
1-SW-P-10A 1-SW-P-10B	Service Water	3	Service Water Pump to Charging Pump	Centrifugal	42	Yes
1-VS-P-1A 1-VS-P-1B 1-VS-P-1C 1-VS-P-1D 1-VS-P-1E	Ventilation	3	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	None	No
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	Ventilation	3	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	None	No

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RELIEF REQUEST P-7

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Service Water

Group: B

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason 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

RELIEF REQUEST P-7 (Cont.)

tide level range to produce repeatable results has proven impractical. To compensate for the change in total system head, a pump reference curve will be prepared based on test results taken at different tide levels. Tests will be conducted within the tide level limits of the curve, and results will be compared to acceptance criteria based on the reference curve and the ranges given in Table ISTB-5200-1. Inlet pressure will be calculated from tide level. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

5.0 Proposed Alternative and Bases for Use

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. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-7 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-7 will no longer be necessary.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

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RELIEF REQUEST P-7 (Cont.)

The following relief requests for other plants that are similar to P-7 were approved by the NRC.

Pump Relief Request P-3 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR4 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604). PRR4 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-7 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-8

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Main Control Room Air Conditioning

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason 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

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RELIEF REQUEST P-8 (Cont.)

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.

5.0 Proposed Alternative and Bases for Use

The chilled water circulating pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-8 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-8 will no longer be necessary.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

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RELIEF REQUEST P-8 (Cont.)

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-8 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-9

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Component Cooling

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason 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.

RELIEF REQUEST P-9 (Cont.)

5.0 Proposed Alternative and Bases for Use

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

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The proposed alternative described in Relief Request P-9 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-9 will no longer be necessary.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

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RELIEF REQUEST P-9 (Cont.)

These relief requests are similar to P-9 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-10

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

Function: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system.

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

Plant conditions may not be the same as when the reference values were established when performing the quarterly Group A tests. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system and causes undesirable perturbations within the Reactor Coolant System.

RELIEF REQUEST P-10 (Cont.)

Therefore, pumps will be tested in a range of flows and the results will be compared to acceptance criteria based a portion of the pump curve and the hydraulic acceptance criteria given in ISTB.

Past vibration data for the subject pumps have been reviewed and it has been determined that pump vibration does not vary significantly with flow rate over the range of the test flow rates. This alternative to the requirements of ISTB-5121 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

The charging/safety Injection pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-10 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-10 will no longer be necessary.

7.0 <u>Precedents</u>

The following relief requests for other plants that are similar to P-10 were approved by the NRC.

Pump Relief Request P-8 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

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RELIEF REQUEST P-10 (Cont.)

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST V-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control and Safety Injection

Category: A for 1-CH-MOV-1115B and D, and 1-SI-MOV-1885A-D AC for 1-SI-25

Class: 2

Function: RWST Isolation Valves

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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ISTC-3630(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in ISTC-3630(e) above shall be declared inoperable and be either repaired or replaced.

4.0 Reason for Request

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

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RELIEF REQUEST V-1 (Cont.)

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

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

5.0 Proposed Alternatives and Bases for Use

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

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

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RELIEF REQUEST V-1 (Cont.)

6.0 Duration of the Proposed Alternative

The proposed alternatives described in Relief Request V-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to V-1 was approved by the NRC.

Pump Relief Request V-1 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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ATTACHMENT 3

SURRY POWER STATION UNIT 1 INSERVICE TESTING PROGRAM FIFTH TESTING INTERVAL UPDATE SUMMARY

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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SURRY POWER STATION UNIT 1 INSERVICE TESTING PROGRAM FIFTH TESTING INTERVAL UPDATE SUMMARY

The Surry Unit 1 ASME Inservice Testing (IST) Program for Pumps and Valves has been updated for the fifth 10 year testing interval which starts on May 10th, 2014. The Unit 2 IST program has the same fifth 10 year testing interval start date as Unit 1.

This update is required every 10 years by the Code of Federal Regulations, 10 CFR 50.55a(f)(4)(ii) which states in part that the IST programs "must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval." The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 2004 Edition, the 2005 Addenda and the 2006 Addenda. The Code reference became effective on July 21st, 2011 and applies to the fifth IST interval for Surry Unit 1. The Surry Unit 1 IST program has been updated to comply with the latest OM Code edition.

There are no significant technical changes to the ASME OM Code scope and testing requirements between the Surry IST Program fourth interval, which was based on the ASME OM Code, 1998 Edition and 2000 Addenda, and the fifth interval.

Fifth Interval IST Program Update Summary

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

Section 1.0 INTRODUCTION

The starting and ending dates for the fifth interval are described

Section 2.0 GENERAL PROGRAM DEVELOPMENT

References to the ASME OM Code, 1998 Edition and 2000 Addenda, were replaced by references to the ASME OM Code, 2004 Edition 2005 Addenda and 2006 Addenda. A new subsection, Section 2.3 Program Relief Requests, was added.

Section 2.1 Program Scope

Revision number was deleted for RG 1.26 reference. General reference to the RG is adequate.

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Section 2.21 Program Update

Interval reference was updated.

Section 2.3 Program Relief Requests

This section was added in order to document Relief Request G-1. Relief Request G-1 allows for grace on the time period between periodic tests. For tests with a frequency of less than 2 years, a grace period of 25% of the frequency is allowed and for tests with a frequency greater than two years, 6 months are allowed. This relief request is supported by the ASME Code Case OMN-20.

Section 3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

Section 3.1 Program Development Philosophy

Minor editorial changes were made to this section.

Section 3.2 Program Implementation

No changes were made to this section.

Section 3.3 Program Administration

There were no changes to this section.

Section 3.4 Pump Reference List

There were no changes to this section.

Section 3.5 Pump Inservice Test Table

Minor editorial changes were made. Changes to relief requests are described in Section 3.6. Specific vibration points were removed from the tables.

In addition to minor editorial changes, the following changes were made to the PUMP INSERVICE TEST TABLE:

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Unit 1 Pump No.	Comments/Program Change
1-CC-P-1A 1-CC-P-1B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-5 was renumbered to P-9 for Interval 5. Relief Request P-1 for smooth running pumps was added to 1-CC-P-1A.
1-CC-P-2A 1-CC-P-2B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-7 was renumbered to P-4 for Interval 5.
1-CH-P-1A 1-CH-P-1B 1-CH-P-1C	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-10 was added to allow for the use of a pump curve for the Group A quarterly pump test per ASME OM Code Case OMN-16.
1-CH-P-2A 1-CH-P-2B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-6 was renumbered to P-3 for Interval 5. Relief Request P-1 for smooth running pumps was added to 1-CH-P-2A.
1-CS-P-1A 1-CS-P-1B	Program Change: The Interval 4 Relief Request P-8 was renumbered to P-5 for Interval 5.
1-FW-P-2 1-FW-P-3A 1-FW-P-3B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to 1-FW-P-3B.

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Unit 1 Pump No.	Comments/Program Change
1-RH-P-1A 1-RH-P-1B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to both pumps.
	There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request Relief.
1-RS-P-1A 1-RS-P-1B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
1-RS-P-2A 1-RS-P-2B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
1-SI-P-1A 1-SI-P-1B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
1-SW-P-10A 1-SW-P-10B	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to 1-SW-P-10B.
1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-3 was renumbered to P-7 for Interval 5.

Unit 1 Pump No.	Comments/Program Change
1-VS-P-1A 1-VS-P-1B 1-VS-P-1C 1-VS-P-1D 1-VS-P-1E	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to 1-VS-P-1C and removed from 1- VS-P-1A.
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	Program Change: Relief Request P-6 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-4 was renumbered to P-8 for Interval 5. Relief Request P-1 for smooth running pumps was added to 1-VS-P-2A and 1-VS-P- 2B.

Section 3.6 Pump Test Program Relief Requests

The relief requests that were carried over from the fourth interval were approved for use by the NRC for the fourth interval. All relief requests for the fifth interval have to be approved by the NRC regardless of their approval status from the fourth interval.

Unit 1 Relief Request	Program Change
P-1	Relief Request P-1 was carried over from the fourth interval and establishes a minimum reference value of 0.05 ips to be used for vibration testing for the pumps listed in Table P-1.1. The Code references were updated.
	The bases for including pumps in Table P-1.1 is that there is at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips) assigned to each pump.

Unit 1 Relief Request	Program Change
P-2	Relief Request P-2 was carried over from the fourth interval and allows residual heat removal pumps 1-RH-P-1A and 1- RH-P-1B to be tested during cold shutdowns.
	There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request Relief.
P-3	Relief Request P-3 was carried over from the fourth interval (formally P-6). This request allows relief from requiring 2% accuracy on the inlet pressure gauges of 1-CH-P-2A and 1-CH-P-2B for group A tests as well as relief from requiring full scale range to be less than or equal to 3 times the reference value.
P-4	Relief Request P-4 was carried over from the fourth interval (formally P-7). This request provides relief from requiring full scale range to be less than or equal to 3 times the reference value for the inlet pressure gauges monitoring 1-CH-P-2A and 1-CH-P-2B.
P-5	Relief Request P-5 was carried over from the fourth interval (formally P-8) and allows relief from testing 1-CS-P-1A and 1- CS-P-1B within 20% of the pump design flow rate.
P-6	Relief Request P-6 has been added to the IST Program and increases the upper required action limit on comprehensive pump tests from 1.03% to 1.06% per OM Code Case OMN-19. This applies to all ASME classed pumps except for the CS pumps due to the test loop configurations ability to meet the design basis accident flow rate.

Unit 1 Relief Request	Program Change
P-7	Relief Request P-7 was carried over from the fourth interval (formally P-3). The former P-3 relief was based off of OM Code Case OMN-9. OMN-9 is being replaced by OMN-16 and carries that same title. Relief Request P-7 allows for the use of a pump curve for testing the emergency SW pumps 1-SW-P-1A, 1-SW-P-1B and 1-SW-P-1C.
P-8	Relief Request P-8 was carried over from the fourth interval (formally P-4). The former P-4 relief was based off of OM Code Case OMN-9. OMN-9 is being replaced by OMN-16 and carries that same title. Relief Request P-8 allows for the use of a pump curve for testing the main control room air conditioning chilled water pumps 1-VS-P-2A, 1-VS-P-2B, 1-VS-P-2C, 1-VS-P-2D and 1-VS-P-2E.
P-9	Relief Request P-9 was carried over from the fourth interval (formally P-5). The former P-5 relief was based off of OM Code Case OMN-9. OMN-9 is being replaced by OMN-16 and carries that same title. Relief Request P-9 allows for the use of a pump curve for testing the main component cooling pumps 1-CC-P-1A and 1-CC-P-1B.
P-10	Relief Request P-10 has been added to the IST Program and allows for the use of a pump curve for quarterly testing the charging pumps 1-CH-P-1A, 1-CH-P-1B and 1-CH-P-1C per ASME OM Code Case OMN-16.

Section 3.7 Alternative Testing for Non-Code Pumps.

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

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Unit 1 Non-Code Alternative Testing	Comments/Program Change
PNC-1	PNC-1 was carried over from the fourth interval and applies to 1-EE-P-1A, 1C, 1D and 1F. The Code references were updated and verified.

Section 4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTON

Section 4.1 Program Development Philosophy

Minor editorial changes were made to this section.

Section 4.2 Program Implementation

The Code references were updated.

Section 4.3 Program Administration

There were no changes to this section.

Section 4.4 Valve Inservice Test Table

Minor editorial changes were made in the valve table description and the valve table. Note 1 was updated to reflect the change of ASME OM Code Case OMN-8 being incorporated into ISTC-5100. There were no scope changes from Interval 4 to Interval 5 for valve testing. The cold shutdown and reactor refueling justifications were renumbered as described in Sections 4.6 and 4.7 below.

Section 4.5 Valve Test Program Relief Requests

Unit 1 Relief Request	Program Change
V-1	Relief Request V-1 was carried over from the fourth interval (formally V-2) and allows for flexibility with combined leak rates of values on flow paths to the RWST.

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Interval 4 Relief Request V-1 was withdrawn because the NRC found it unnecessary in their safety revaluation report. Interval 4 Relief Requests V-3, V-4, V-5 and V-6 were deleted from the Interval 4 program as check valves were moved to the check valve condition monitoring program.

4.6 Valve Test Program Cold Shutdown Justifications

During the course of the fourth interval, certain cold shutdown justifications were either withdrawn or replaced. The cold shutdown justification numbers for the fifth interval have been reordered to eliminate gaps in the number sequence. Also, the technical specification (TS) references were updated and minor editorial changes were made. Cold shutdown justifications with a change are discussed below.

Unit 1	
Cold	
Shutdown	Program Change
Justification	
CSV-4	CSV number changed from CSV-5 to CSV-4.
CSV-5	CSV number changed from CSV-6 to CSV-5.
CSV-6	CSV number changed from CSV-7 to CSV-6.
CSV-7	CSV number changed from CSV-8 to CSV-7. Valve category
	for 1-CH-MOV-1289A was revised from A to B.
CSV-8	CSV number changed from CSV-9 to CSV-8. Valve category
	was revised from A to B. TS reference revised from TS 3.3.A.8
	to TS 3.3.A.3 and the verbiage revised to reflect the current TS.
	The technical basis for the deferral did not change.
CSV-9	CSV number changed from CSV-10 to CSV-9. Valve category
	was revised from A to B.
CSV-10	CSV number changed from CSV-11 to CSV-10.
CSV-11	CSV number changed from CSV-12 to CSV-11.
CSV-12	CSV number changed from CSV-13 to CSV-12. Valve category
	was revised from A to B. Reference to TS 3.3.A.9 was deleted
	from the CSV. TS 3.3.A.9 was deleted from the current TS.
	The technical basis for the deferral did not change.
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Unit 1 Cold Shutdown Justification	Program Change
CSV-13	CSV number changed from CSV-14 to CSV-13.
CSV-14	CSV number changed from CSV-15 to CSV-14.
CSV-15	CSV number changed from CSV-16 to CSV-15.
CSV-16	CSV number changed from CSV-17 to CSV-16.
CSV-17	CSV number changed from CSV-18 to CSV-17. TS reference revised from TS 3.3.A.10 to TS 3.3.A.2.d to reflect the current TS. The technical basis for the deferral did not change.
CSV-18	CSV number changed from CSV-19 to CSV-18.
CSV-19	CSV number changed from CSV-24 to CSV-19. Valve class for valves 1-CW-MOV-100A to 100D was revised from 3 to NC (non-Class).

4.7 Valve Test Program Reactor Refueling Justifications

During the course of the fourth interval, certain reactor refueling justifications were either withdrawn or replaced. The reactor refueling justification numbers for the fifth interval have been reordered to eliminate gaps in the number sequence as described below. There were no technical changes or the need for TS or Code reference changes to any of the reactor refueling justifications.

Unit 1 Reactor Refueling Justification	Program Change
RRV-1	RRV number changed from RRV-18 to RRV-1.
RRV-2	RRV number changed from RRV-23 to RRV-2.
RRV-3	RRV number changed from RRV-24 to RRV-3.
RRV-4	RRV number changed from RRV-29 to RRV-4.

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Section 4.8 Alternative Testing for Non-Code Valves

This section deals with valves that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code valves. Relief from Code provisions is not required for non-Code valves. However, cases where the Code provisions are not met are documented in this section. The non-Code alternative test numbers for the fifth interval have been reordered to eliminate gaps in the number sequence as described below. There were no technical changes or the need for TS reference changes to any of the non-Code alternative test descriptions.

Unit 1 Non-Code Alternative Test	Program Change
VNC-1	VNC number changed from VNC-2 to VNC-1 and minor editorial changes were made.
VNC-2	VNC number changed from VNC-3 to VNC-2.
VNC-3	VNC number changed from VNC-5 to VNC-3. VNC-3 was updated to reflect the change of ASME OM Code Case OMN-8 being incorporated into ISTC-5100.
VNC-4	VNC number changed from VNC-7 to VNC-4. Valve category was revised from B to C.

Section 5.0 REPORTING OF INSERVICE TEST RESULTS

There were no changes to this section.

Section 6.0 QUALITY ASSURANCE PROGRAM

There were no changes to this section.

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ATTACHMENT 4

SURRY UNIT 1 INSERVICE TESTING PROGRAM PLAN FIFTH TESTING INTERVAL

REVISION 0

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

1

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

SURRY POWER STATION

UNIT 1

INSERVICE TESTING PROGRAM PLAN

FOR PUMPS AND VALVES

FIFTH TESTING INTERVAL

MAY 10, 2014 - MAY 09, 2024

REVISION 0

COMMERCIAL OPERATION: DECEMBER 22, 1972

ADDRESSES:

VIRGINIA ELECTRIC AND POWER COMPANY P. O. BOX 26666 RICHMOND, VIRGINIA 23261

SURRY POWER STATION 5570 HOG ISLAND RD SURRY, VIRGINIA 23883

PLAN: U1 IST PROGRAM PLAN INTERVAL 5

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

1.0 INTRODUCTION

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

The IST Program Plan is comprised of two subprograms – the IST Program for Pumps and the IST Program for Valves. The development, implementation and administration of these programs are detailed in subsequent sections. This IST Program Plan applies to the fifth 10-year IST interval for Surry Power Station Unit 1 which starts on May 10, 2014 and ends May 9, 2024.

Surry Power Station requested an exemption from Section XI of the ASME Code to extend the Surry Unit 1 second 10-year IST interval for pumps and valves from December 22, 1992 to May 10, 1994 to coincide with the end of the second 10-year IST interval for Unit 2. This extension was granted in the form of an exemption to the Code of Federal Regulations, 10CFR50.55a(g)(4) per NRC letter dated February 16, 1993 (Serial No. 93-119). For IST, 10CFR50.55a(g) was subsequently replaced by 10CFR50.55a(f).

2.0 GENERAL PROGRAM DEVELOPMENT

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

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

The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 2004 Edition, the 2005 Addenda and the 2006 Addenda. The Code reference became effective on July 21st, 2011 and applies to the fifth IST interval for Surry Unit 1. The IST Program for the fifth IST interval complies with these edition and addenda.

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

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

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

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

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

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions including Generic Letter 89-04 and NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, Revision 1. Other than these guides, there is no specific guidance for developing the IST Program scope of testing. Therefore, a set of rules was established by which the scope of the Surry ASME IST Program is determined including components that are to be included and the extent and type of testing required for each. Based on these rules, the philosophy and assumptions used in determining the test requirements for selected pumps and valves were documented.

2.1 PROGRAM SCOPE

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

Final Safety Analysis Report (FSAR), Technical Specifications, USNRC Regulatory Guide 1.26, Past program correspondence, Operating Procedures (normal, emergency and abnormal) and Plant System Descriptions.

The sequence followed during the development effort was as follows:

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

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

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

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

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

2.2 PROGRAM UPDATE

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

1) plant design changes,

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

3) changes in accident mitigating procedures philosophy and

4) later editions and addenda to the ASME OM Code.

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

2.3 PROGRAM RELIEF REQUESTS

The relief requests in this section apply to the general administration of the IST Program.

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RELIEF REQUEST G-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(ii), Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

All Pumps and Valves contained within the Inservice Testing Program scope

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

Code Paragraph	Description
ISTA-3120(a)	"The frequency for the inservice testing shall be in
	accordance with the requirements of Section 1ST."
ISTB-3400	Frequency of Inservice Tests
Table ISTB-3400-1	Inservice Test Frequency
ISTC-3510	Exercising Test Frequency
ISTC-3540	Manual Valves
ISTC-3630(a)	Frequency
ISTC-3700	Position Verification Testing
ISTC-5221 (c)(3)	"At least one valve from each group shall be
	disassembled and examined at each refueling outage;
	all valves in a group shall be disassembled and
	examined at least once every 8 years."
Appendix I, I-1320	Test Frequencies, Class 1 Pressure Relief Valves
Appendix I, I-1330	Test Frequencies, Class 1 Nonreclosing Pressure
	Relief Devices
Appendix I, I-1340	Test Frequencies - Class 1 Pressure Relief Valves that
	are used for Thermal Relief Application
Appendix I, I-1350	Test Frequencies - Class 2 and 3 Pressure Relief
	Valves
Appendix I, I-1360	Test Frequencies - Class 2 and 3 Nonreclosing
	Pressure Relief Devices
Appendix 1, I-1370	Test Frequencies - Class 2 and 3 Primary
l	Containment Vacuum Relief Valves

RELIEF REQUEST G-1 (Cont.)

Code Paragraph	Description
Appendix I, I-1380	Test Frequencies - Class 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves
Appendix I, I-1390	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application
Appendix II, II-4000(a)(1)	Performance Improvement Activities Interval
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities Interval

4.0 Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section 1ST establishes the inservice test frequency for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in the Table 3.2 of NUREG 1482, Revision 1) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow for a less than or equal to 25% extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (TS 4.0.2). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies irrespective of allowances provided under TS Administrative Controls (i.e., TS 6.4.I, "Inservice Testing Program," invokes TS 4.0.2 for various OM Code frequencies).

The lack of a tolerance band on the ASME OM Code inservice test frequency restricts operational flexibility. There may be a conflict where a surveillance test could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after a plant condition or associated Limiting Condition for Operation (LCO) is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can be and should be performed.

RELIEF REQUEST G-1 (Cont.)

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in TS 4.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

Thus, just as with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

5.0 Proposed Alternative and Bases for Use

Code Case OMN-20 is included in the ASME OM Code, 2009 Edition and will be used as the alternative to the frequencies of the ASME OM Code.

The requirements of Code Case OMN-20 are described below.

ASME OM Division: 1 Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

- a) Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in the table below. The specified time period between tests may be reduced or extended as follows:
 - 1) For periods specified as less than 2 years, the period may be extended by up to 25% for any given test.
 - 2) For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
 - 3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

RELIEF REQUEST G-1 (Cont.)

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) and other less than two year test frequencies not specified in the table below.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, *Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants,* as Subsection ISTD contains its own rules for period extensions.

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
x Years	x calendar years where 'x' is a whole number of years ≥ 2

b) Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by ASME OM Code 2004 Edition, 2005 and 2006 Addenda, and earlier editions and addenda of ASME OM Code.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request G-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

The following relief request for another plant that is similar to Relief Request G-1 was approved by the NRC.

Request Number RV-01 for Quad Cities Units 1 and 2 was approved by the NRC by letter dated 2/14/2013 (TAC Nos. ME7981 through ME7988, ME7990 through ME7995.)

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RELIEF REQUEST G-1 (Cont.)

8.0 **References**

- 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda
- Surry TS Paragraph 4.0.2
 Surry TS 6.4.I, Inservice Testing Program

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 1 Technical Specification 6.4.I describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 pumps. The Surry Unit 1 Inservice Testing (IST) Program for Pumps has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTB and Technical Specifications.

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

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

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

3.2 PROGRAM IMPLEMENTATION

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

Reference data are gathered during initial surveillance tests. With the ASME OM Code, these initial reference tests can be a preservice test as described in ISTB-3100 or the first inservice test as described in ISTB-3200. ISTB-3100 requires that at least five points along the pump curve be measured for pumps where the system resistance can be varied. ISTB-3200 refers to Group A tests, Group B tests and comprehensive

tests. Group A tests apply to Group A pumps which are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. Group B tests apply to Group B pumps which are pumps in standby systems that are not operated routinely except for testing. Comprehensive tests apply to both Group A and B pumps and require more accurate pressure instrumentation (0.5% versus 2% for the Group A and B tests), but are performed on a less frequent basis.

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

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

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

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

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

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

4) <u>Precautions</u>: 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) <u>Instructions</u>: The main body of a procedure should contain step by step instructions in the degree of detail necessary for performing a required test.

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

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

3.3 PROGRAM ADMINISTRATION

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

3.4 PUMP REFERENCE LIST

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

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

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

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

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

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

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

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

Description: These centrifugal pumps supply boric acid to the suction of the charging pumps for emergency boration. The boric acid transfer pumps operate at two constant speeds. The low speed is used when recirculating the contents of the boric acid storage tanks, and the high speed (approximately double the low speed) is used when the pumps discharge to the charging pump suction header during emergency boration events and blender operations. The tests are conducted with the pumps on high speed. The pumps operate routinely during normal operation and are defined as Group A pumps.

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

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

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

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

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

Description: These centrifugal pumps supply auxiliary feedwater to the steam generators following a loss of normal feedwater flow. The auxiliary feedwater pumps are in a standby system and are defined as Group B pumps. The steam driven pump 1-FW-P-2 is a variable speed pump, and the motor driven pumps 1-FW-P-3A and 3B are constant speed pumps.

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

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

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

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

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

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

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

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

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

Description: These deep draft pumps supply the required service water to the canal to provide for minimum safeguards operation in the unlikely event of a loss of off-site power coincident with a design basis accident. The emergency service water pumps are in a standby system and are defined as Group B pumps. Each pump is powered by a diesel connected to the pump by an angled reduction gear drive. The tests are conducted with the diesel at or near full throttle. A review of the as-found values for the speed measured on the vertical pump shaft when the diesel is at full throttle shows that the speeds are routinely within 2 rpm of the target speed of 880 rpm. However, the speed is then typically adjusted to a value closer to the target speed. Therefore, for testing purposes, these pumps are considered variable speed pumps.

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

Description: These centrifugal pumps provide cooling water for Charging Pump Cooling Water Systems. The charging pump service water pumps

are constant speed pumps that operate routinely during normal operation and are defined as Group A pumps.

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

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

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

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

3.5 PUMP INSERVICE TEST TABLE

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

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

To aid the reader in interpreting the Pump Inservice Test Table, brief explanations of the table headings and abbreviations are provided below. 1) <u>Pump Number</u> - Each pump in the plant has a unique "mark" number which identifies the system to which the pump belongs.

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

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

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

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

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

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

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

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

7) <u>Test Type</u> - The required ISTB test quantities. Test types with "C_" as a prefix represent comprehensive tests that are conducted every 24 months. Test types without the prefix "C_" represent either Group A or B tests that are conducted every three months unless the test frequency has been deferred to cold shutdown or reactor refueling by a relief request. Examples of test type abbreviations are given below.

DEV_HEAD - developed pump head

DIFF_PRESSURE - differential pressure

DISCH_PRESSURE - discharge pressure

FLOW - flow

FLOW_TOTAL - flow total is the sum of branch flows

PUMP_SPEED - pump speed for variable speed pumps

VIB - vibration measured at a given bearing

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

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

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

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

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

9) Ref Flow Status – ISTB-3300 requires that the reference flow rate be within 20% of pump design flow. The reference flow rate is the flow rate used to establish acceptance criteria. For Group A and B tests, ISTB-3300(e)(2) allows for testing outside the 20% range due to impracticality. For comprehensive tests, ISTB-3300(e)(1) requires that the tests to be performed within the 20% range with no exceptions. Therefore, relief from Code provisions is required when testing outside the 20% range for comprehensive tests.

FULL (full flow) in this column indicates that the reference flow rate is within 20% of pump design flow. If the reference flow rate does not meet this requirement a note is provided at the end of the pump table with an explanation.

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

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

PUMP NUMBERDRAWING NUMBERSHEET NOCOORASME CLASSIST GROUP PATHFLOW RESISTSYSTEM TYPETEST TESTTEST REFLOWREQUEST REFLOW REALALTER (P-)1-CC-P-1A11448-CBM-072D1 OF 5D53ANORMAL NORMALVARIABLE VIBC_DIFF_PRESS C_FLOW_TOTAL UB246.91-CC-P-1A11448-CBM-072D1 OF 5D53ANORMAL NORMALVARIABLE VIBC_DIFF_PRESSURE C_FLOW_TOTAL UB03NOTE 191-CC-P-1B11448-CBM-072D1 OF 5C53ANORMAL NORMALVARIABLE VARIABLE C_DIFF_PRESSURE C_FLOW_TOTAL C_VIB24FULL 6.96.91-CC-P-1B11448-CBM-072D1 OF 5C53ANORMAL NORMALVARIABLE VARIABLE C_DIFF_PRESSURE FLOW_TOTAL UB24FULL 6.91-CC-P-2A11448-CBM-071B2 OF 2C73ANORMAL NORMALVARIABLE VARIABLE C_DIFF_PRESSURE C_FLOW C_VIB24FULL 61-CC-P-2A11448-CBM-071B2 OF 2C73ANORMAL NORMALVARIABLE VARIABLE C_FLOW C_FLOW C_FLOW C_FLOW UB24FULL 61-CC-P-2A11448-CBM-071B2 OF 2C73ANORMAL NORMALVARIABLE VARIABLE C_FLOW C_FLOW C_FLOW C_VIB24FULL 61-CC-P-2A11448-CBM-071B2 OF 2C73ANORMAL NORMALVARIABLE VIB <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>UDLIVIC</th> <th></th> <th></th> <th></th> <th></th> <th></th>								UDLIVIC					
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C_VIB 24 1 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03 1 1-CC-P-2B 11448-CBM-071B 2 OF 2 C3 3 A NORMAL VARIABLE C_DIFF_PRESS 24 6 C_FLOW 24 FULL 6 C_VIB 24 DIFF_PRESSURE 03 4 FLOW 03 FULL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0									CFLOW		FULL	6	
DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03 1 1-CC-P-2B 11448-CBM-071B 2 OF 2 C3 3 A NORMAL VARIABLE C_DIFF_PRESS 24 6 C_FLOW 24 FULL 6 C_VIB 24 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03												1	
VIB 03 1 COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL PUMP 1-CC-P-2B 11448-CBM-071B 2 OF 2 C3 3 A NORMAL VARIABLE C_DIFF_PRESS 24 6 C_FLOW 24 FULL 6 C_VIB 24 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03										03		4	
COMPONENT COOLING WATER TO CHARGING PUMP CENTRIFUGAL PUMP									FLOW	03	FULL		
1-CC-P-2B 11448-CBM-071B 2 OF 2 C3 3 A NORMAL VARIABLE C_DIFF_PRESS 24 6 C_FLOW 24 FULL 6 C_VIB 24 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03									VIB	03		1	
C_FLOW 24 FULL 6 C_VIB 24 01 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03		COMPONENT CO	DLING WA	TER TO C	CHARGIN	g pump	CENTRIFU	GAL PUMP					
C_FLOW 24 FULL 6 C_VIB 24 01 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03	 1-СС-Р-2В	11448-CBM-071B	2 OF 2	 C3	3	 A	NORMAL	VARIABLE	C DIFF PRESS	 24		 6	
C_VIB 24 DIFF_PRESSURE 03 4 FLOW 03 FULL VIB 03					-				CFLOW		FULL		
DĪFF_PRESSURE 03 4 FLOW 03 FULL VIB 03												-	
FLOW 03 FULL VIB 03												4	
VIB 03											FULL	1	
											· ····		
		COMPONENT CO	OLING WA	TER TO C			CENTRIEU			00			
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Revision 0

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CH-P-1A	11448-CBM-088B	2 OF 3	C8	2	A	CAVITY	VARIABLE	C_DIFF_PRESS	24		6	
								C_SUCTION_FLOW	24	FULL	6	
						NORMAL	VARIABLE	C_VIB DIFF_PRESSURE	24 03		10	
						NORMAL	VARIADLE	SUCTION_FLOW	03	NOTE 2	10	
								VIB	03	NOTE 2	10	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIFL	JGAL PUMP						
 1-CH-P-1B	11448-CBM-088B	2 OF 3	C6	2	Α	CAVITY	VARIABLE	C_DIFF_PRESS	24		6	
								C_SUCTION_FLOW	24	FULL	6	
								C_VIB	24		1	
						NORMAL	VARIABLE	DIFF_PRESSURE	03	NOTE 2	10	
								SUCTION_FLOW	03 03	NOTE 2	10 1	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIFL	JGAL PUMP		VID	00		·	
 1-CH-P-1C	11448-CBM-088B	2 OF 3	C4	2	Α	CAVITY	VARIABLE	C_DIFF_PRESS	24		6	
								C_SUCTION_FLOW	24	FULL	6	
								C_VIB	24		1	
						NORMAL	VARIABLE	DIFF_PRESSURE	03		10	
								SUCTION_FLOW	03 03	NOTE 2	10 1	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIFL	JGAL PUMP		VIB	03		I	
 1-CH-P-2A		1 OF 4	 B7	2	 A	RECIRC	VARIABLE	C_DIFF_PRESS	24		6	
	:			-				C_FLOW	24	FULL	6	
								C_VIB	24		. 1	
								DIFF_PRESSURE	03		3	
								FLOW	03	FULL		
	BORIC ACID TRAN				1			VIB	03		1	

PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS		FLOW P PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-CH-P-2B	11448-CBM-088A	1 OF 4	B6	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	6 6 1	
								DIFF_PRESSURE FLOW VIB	03 03 03	FULL	3 1	
	BORIC ACID TRAN	NSFER CEI	NIRIFUG	AL PUMP								
1-CS-P-1A	11448-CBM-084A	2 OF 3	C6	2	В	RECIRC	FIXED	C_DIFF_PRESS C_TOTAL_FLOW C_VIB DIFF_PRESSURE	24 24 24 03	NOTE 3	5	
	CONTAINMENT S	PRAY PUM	Р					TOTAL_FLOW	03	NOTE 3		
 1-CS-P-1B	11448-CBM-084A	2 OF 3	B5	2	В	RECIRC	FIXED	C_DIFF_PRESS C_TOTAL_FLOW C_VIB	24 24 24	NOTE 3	5	
	CONTAINMENT S	PRAY PUM	Р					DIFF_PRESSURE TOTAL_FLOW	03 03	NOTE 3		
 1-EE-P-1A	11448-FB-038A	2 OF 4	C7	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB	NA 03 03	FULL		1 1 1
	EMERGENCY DIE DISPLACEMENT F		RATOR F	UEL OIL	TRANSF	ER POSITIV	'E	DISCH_PRESSURE FLOW	NA 03	FULL		1 1
1-EE-P-1C	11448-FB-038A	2 OF 4	F7	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB	NA 03 03	FULL		1 1 1
	EMERGENCY DIE DISPLACEMENT F		RATOR F	UEL OIL	TRANSI	ER POSITIV	Έ	DISCH_PRESSURE FLOW	NA 03	FULL		1

PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS	ISTB GROUI	FLOW P PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-EE-P-1D	11448-FB-038A	2 OF 4	B6	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB DISCH PRESSURE	NA 03 03 NA	FULL		1 1 1 1
	EMERGENCY DIE		RATOR F	UEL OIL	TRANSF	ER POSITIV	E	FLOW	03	FULL		1
1-EE-P-1F	11448-FB-038A	2 OF 4	E6	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB DISCH_PRESSURE	NA 03 03 NA	FULL		1 1 1 1
	EMERGENCY DIE		RATOR F	UEL OIL	TRANSF	ER POSITIV	E	FLOW	03	FULL		1
1-FW-P-2	11448-CBM-068A	3 OF 4	B8	3	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_PUMP_SPEED C_VIB DIFF PRESSURE	24 24 24 24 24 03	FULL	6 6	
		NATER ST	EAM DRIV	VEN CEN	TRIFUG	AL PUMP		FLOW PUMP_SPEED	03 03	FULL		
1-FW-P-3A	11448-CBM-068A	3 OF 4	B6	3	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW	24 24 24 03 03	FULL	6 6	
		VATER MC	TOR DRI	IVEN CEN	ITRIFUG	GAL PUMP		FLOW	03	FULL		
1-FW-P-3B	11448-CBM-068A	3 OF 4	B5	3	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW	24 24 24 03 03	FULL	6 6 1	
	AUXILIARY FEED	VATER MC	TOR DRI	IVEN CEN	ITRIFUG	GAL PUMP			••			

						••••••						
PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUI	FLOW P PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-RH-P-1A	11448-CBM-087A	1 OF 2	D7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	6 6 1	
	RESIDUAL HEAT F	REMOVAL	PUMP					DIFF_PRESSURE FLOW VIB	CS CS CS	FULL	2 2 2,1	
1-RH-P-1B	11448-CBM-087A	1 OF 2	D4	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	6 6 1	
								DIFF_PRESSURE FLOW VIB	CS CS CS	FULL	2 2 2,1	
	RESIDUAL HEAT F	REMOVAL	PUMP									
1-RS-P-1A	11448-CBM-084B	1 OF 2	C5	2	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24	FULL	6 6	
	INSIDE RECIRCUL	ATION SP	RAY VER		NE SHAF	T PUMP		C_VIB	24			
1-RS-P-1B	11448-CBM-084B	1 OF 2	C7	2	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24	FULL	6 6	
	INSIDE RECIRCUL	ATION SP	RAY VER	TICAL LI	NE SHAF	T PUMP		0_00	24			
1-RS-P-2A	11448-CBM-084B	2 OF 2	C6	2	В	RECIRC	FIXED	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24		6 6	
	OUTSIDE RECIRC	ULATION	SPRAY VI	ERTICAL	LINE SH	IAFT PUMP		0_410	27			
1-RS-P-2B	11448-CBM-084B	2 OF 2	C7	2	В	RECIRC	FIXED	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24		6 6	
	OUTSIDE RECIRC	ULATION		ERTICAL	LINE SH	IAFT PUMP		0_1.0	E-1			

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PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUF	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-SI-P-1A	11448-CBM-089A	1 OF 3	C6	2	В	CAVITY	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24	FULL	6 6	
						RECIRC	FIXED	DIFF_PRESSURE	03 03	NOTE 4		
	LOW HEAD SAFET	Y INJECT	ON VERI	FICAL LIN	E SHAF	r PUMP						
1-SI-P-1B	11448-CBM-089A	1 OF 3	C4	2	В	CAVITY	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24 24	FULL	6 6	
						RECIRC	FIXED	DIFF_PRESSURE FLOW	03 03	NOTE 4		
	LOW HEAD SAFET	Y INJECT	ON VERT	FICAL LIN	E SHAFT	F PUMP						
1-SW-P-10A	11448-CBM-071B	1 OF 2	B8	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	6 6 1	
								DIFF_PRESSURE FLOW VIB	03 03 03	FULL	1	
	SERVICE WATER	TO CHARC	SING PUN	AP CENT	RIFUGAL	PUMP						
1-SW-P-10B	11448-CBM-071B	1 OF 2	B3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	6 6 1	<i>.</i> .
								DIFF_PRESSURE FLOW VIB	03 03 03	FULL	1	
	SERVICE WATER	TO CHAR	SING PUN	/IP CENTI	KIFUGAL	POMP						

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PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUF	FLOW	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-SW-P-1A	11448-CBM-071A	1 OF 4	C4	3	В	NORMAL	FIXED	C_DIFF_PRESS C_FLOW C_PUMP_SPEED C_VIB DIFF_PRESSURE	24 24 24 24 24 03	FULL	6,7 6,7 7	
	EMERGENCY SER							FLOW PUMP_SPEED	03 03	FULL	7	
1-SW-P-1B	11448-CBM-071A	1 OF 4	D4	3	В	NORMAL	FIXED	C_DIFF_PRESS C_FLOW C_PUMP_SPEED C_VIB	24 24 24 24	FULL	6,7 6,7	
								DIFF_PRESSURE FLOW PUMP_SPEED	03 03 03	FULL	7 7	
	EMERGENCY SER	RVICE WAT	ER VER	FICAL LIN	IE SHAF	T PUMP						
1-SW-P-1C	11448-CBM-071A	1 OF 4	F4	3	В	NORMAL	FIXED	C_DIFF_PRESS C_FLOW C_PUMP_SPEED	24 24 24 24	FULL	6,7 6,7	
								C_VIB DIFF_PRESSURE FLOW PUMP_SPEED	24 03 03 03	FULL	7 7	
	EMERGENCY SER	RVICE WAT	ER VER	FICAL LIN	IE SHAF	T PUMP		-				

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	JMP JMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB GROUP	FLOW PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
		EMERGENCY SER											
1-`	VS-P-1A	11448-CBM-071D	1 OF 2	D7	3	Α	NORMAL	VARIABLE	C_DIFF_PRESS	24		6	
									C_FLOW	24	FULL	6	
										24 03			
									DIFF_PRESSURE FLOW	03	FULL		
									VIB	03	TOLL		
		MAIN CONTROL RO CENTRIFUGAL PUN		CONDITIC	NING SY	STEM C	ONDENSER	SIDE					
 1-'	 VS-P-1B	11448-CBM-071D	1 OF 2	D6	3	 A	NORMAL	VARIABLE	C_DIFF_PRESS	24		6	
									C_FLOW	24	FULL	6	
									C_VIB	24		1	
									DIFF_PRESSURE	03			
									FLOW	03	FULL	4	
		VIB 03 1 MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CONDENSER SIDE CENTRIFUGAL PUMP											
1-1	 VS-P-1C	11448-CBM-071D	1 OF 2	D3	3	 A	NORMAL	VARIABLE	C_DIFF_PRESS	24		6	
									C_FLOW	24	FULL	6	
									C_VIB	24		1	
									DIFF_PRESSURE	03			
									FLOW	03	FULL		
		MAIN CONTROL RO CENTRIFUGAL PUN		CONDITIC	DNING SY	STEM C	ONDENSER	SIDE	VIB	03		I	

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PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS		FLOW P PATH	SYSTEM RESIST	TEST TYPE		REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
1-VS-P-1D	11448-CBM-071D	2 OF 2	D5	3	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE	24 24 24 03	FULL	6 6 1	
								FLOW	03	FULL	4	
	MAIN CONTROL R CENTRIFUGAL PU		CONDITIC	ONING SY	STEM C	CONDENSER	SIDE	VIB	03		1	
 1-VS-P-1E	11448-CBM-071D	2 OF 2	D4	3	Α	RECIRC	VARIABLE	C_DIFF_PRESS	24		6	
									24 24	FULL	6	
								C_VIB DIFF_PRESSURE	24 03		1	
								FLOW	03	FULL		
	MAIN CONTROL R CENTRIFUGAL PU		CONDITIC	DNING SY	STEM C	CONDENSER	SIDE	VIB	03		1	
1-VS-P-2A	11448-CBB-041A	2 OF 4	B6	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		6,8	
								C_FLOW_TOTAL C_VIB	24 24	FULL	6,8 1	
								DIFF_PRESSURE	03		8	
								FLOW_TOTAL	03	FULL	8	
	MAIN CONTROL R CENTRIFUGAL PU		CONDITIC	ONING SY	STEM C	CHILLER SID	E	VIB	03		1	
1-VS-P-2B	11448-CBB-041A	2 OF 4	B5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS	24		6,8	
								C_FLOW_TOTAL	24 24	FULL	6,8 1	
								C_VIB DIFF_PRESSURE	24 03		1 8	
								FLOW_TOTAL	03	FULL	8	
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											

PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS	ISTB GROU	FLOW P PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
 1-VS-P-2C	11448-CBB-041A	2 OF 4	B4	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW_TOTAL C_VIB DIFF_PRESSURE	24 24 24 03 03	FULL	6,8 6,8 1 8	
	MAIN CONTROL R CENTRIFUGAL PU		CONDITIC	DNING SY	YSTEM	CHILLER SID	E	FLOW_TOTAL VIB	03	FULL	8 1	
 1-VS-P-2D	11448-CBB-041A	3 OF 4	C6 .	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03	FULL	6,8 6,8 1 8 8 1	
	MAIN CONTROL ROOM AIR CONDITIONING SYSTEM CHILLER SIDE CENTRIFUGAL PUMP											
 1-VS-P-2E	11448-CBB-041A	3 OF 4	C5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03	FULL	6,8 6,8 1 8 8 1	
	MAIN CONTROL R CENTRIFUGAL PL		CONDITIC	DNING SY	YSTEM	CHILLER SID	E					

PUMP INSERVICE TEST TABLE NOTES

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Note 1 - As described in Relief Request P-9, pumps 1-CC-P-1A and B are tested over a range of flows every three months. The lower end of this range is less than 20% of pump design flow. However, to minimize system perturbations, the range will not be changed to accommodate the 20% of design flow.

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

Note 3- As described in Relief Request P-5, a comprehensive test reference flow rate will be established for each pump at or near 80% of the pump design flow rate but not less than 76% of design flow rate (1520 gpm) for containment spray pumps 1-CS-P-1A and B. The same flow rate range applies to the Group B test.

Note 4 - The low head safety injection recirculation flow path is the only flow path available for Group B tests that are performed every three months for pumps 1-SI-P-1A and B. Flow within 20% of pump design flow cannot be achieved with this flow path.

3.6 PUMP TEST PROGRAM RELIEF REQUESTS

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

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RELIEF REQUEST P-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i) Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-1.1

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3300, "Reference Values"

ISTB-3300(a) requires that initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, "Preservice Testing," or from the results of the first inservice test.

ISTB-3300(d) requires that reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.

ISTB-3300(f) requires that all subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ISTB-5120, "Inservice Testing" (Centrifugal Pumps, Except Vertical Line Shaft Centrifugal Pumps)

ISTB-5121(e) and ISTB-5123(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5121-1. For example, if vibration exceeds either 6Vr, or 0.7 in/sec, the pump is in the required action range.

RELIEF REQUEST P-1 (Cont.)

ISTB-5220, "Inservice Testing" (Vertical Line Shaft Centrifugal Pumps)

ISTB-5221(e) and ISTB-5223(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5221-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5221-1.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

The pumps listed in Table P-1.1 tend to be smooth running pumps. Each pump listed in Table P-1.1 has at least one vibration reference value (Vr) that is currently less than 0.05 inches per second (ips). Small values for Vr produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5121-1 and ISTB-5221-1 as less than or equal to 2.5Vr. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action if the measured vibration parameter exceeds this acceptable range.

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

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1.1 where the measured reference value is less than 0.05 ips.

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

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

RELIEF REQUEST P-1 (Cont.)

- vibration monitoring and analysis beyond that required by ISTB,
- oil sampling and analysis where applicable (e.g., for pumps with sufficiently large oil reservoirs).

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

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

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-1.1, if a measured reference value is below 0.05 ips for a particular vibration measurement location, then subsequent test results for that location may be compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-1 requests relief from the specific ISTB requirements identified in this request.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

RELIEF REQUEST P-1 (Cont.)

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to Relief Request P-1 were approved by the NRC.

Pump Relief Request P-1 for North Anna 1 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777).

Pump Relief Request PRR8 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

Pump Relief Request PRR8 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-1 (Cont.) Table P-1.1

Pump		Code	OM			Pump Speed
Groups	System	Class	Group	Description	Pump Type	(rpm)
1-CC-P-1A 1-CC-P-1B	Component Cooling	3	A	Component Cooling Water Pumps	Centrifugal	1185
1-CC-P-2A	Component Cooling	3	A	Component Cooling Water Pump to Charging Pump	Centrifugal	3500
1-CH-P-1B 1-CH-P-1C	Chemical and Volume Control/Safety Injection	2	A	High Head Safety Injection/Charging Pump	Centrifugal	6018
1-CH-P-2A 1-CH-P-2B	Chemical and Volume Control	2	A	Boric Acid Transfer Pumps	Centrifugal	3500
1-FW-P-3B	Auxiliary Feedwater	3	В	Auxiliary Feedwater Motor Driven	Centrifugal	3560
1-RH-P-1A 1-RH-P-1B	Residual Heat Removal	2	A	Residual Heat Removal Pump	Centrifugal	1780
1-SW-P-10A 1-SW-P-10B	Service Water	3	A	Service Water Pump to Charging Pump	Centrifugal	3500
1-VS-P-1B 1-VS-P-1C	Ventilation	3	A	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	3550
1-VS-P-1D 1-VS-P-1E	Ventilation	3	A	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	1750
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C	Ventilation	3	A	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	3500
1-VS-P-2D 1-VS-P-2E	Ventilation	3	A	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	3535

RELIEF REQUEST P-2

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i) Code requirement is impractical. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Residual Heat Removal

Group: A

Class: 2

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3400, "Frequency of Inservice Tests," states: "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

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

4.0 Reason for Request

ISTB-3400 and Table ISTB-3400-1

The residual heat removal (RHR) pumps are located inside containment. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RCS is maintained at 2235 psig and the containment atmosphere is maintained at sub-atmospheric pressure during normal operation. The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 460 psig. Therefore, testing the RHR pumps during normal operation is not possible.

RELIEF REQUEST P-2 (Cont.)

5.0 Proposed Alternative and Bases for Use

ISTB-3400 and Table ISTB-3400-1

These pumps will be tested every cold shutdown outage and reactor refueling outage, unless the pump has been tested within the previous three months. (During back-to-back cold shutdown or refueling outages, the test period remains valid for three months following each test, and no additional periodic testing needs to be performed within this three month test period.) For a cold shutdown or reactor refueling that extends longer than three months, the pumps will be tested every three months in accordance with ISTB 3400-1.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-2 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC4251 and MC4252)" dated September 28, 2004.

The following relief requests for other plants that are similar to Relief Request P-2 were approved by the NRC.

Pump Relief Request P-2 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR7 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131) and applies to ISTB-3400 and Table ISTB-3400-1.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-3

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i). Code requirement is impractical. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason for Request

Table ISTB-3500-1

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.

<u>ISTB-3510(b)(1)</u>

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

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

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

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

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

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

5.0 Proposed Alternative and Bases for Use

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

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-3 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to portions of P-3 were approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441). Note that Relief Request PRR-03 only applies to the full scale range requirements in ISTB-3510(b)(1), and not to the instrument accuracy requirements in Table ISTB-3500-1.

Pump Relief Request PRR006 for Fermi 2 was approved by the NRC by letter dated 76/2010 (TAC NOS. ME2548, ME2549, ME2551) and applies to Table ISTB-3510-1.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-4

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Component Cooling Water

Group: A

Class: 3

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 <u>Reason for Request</u>

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

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

5.0 Proposed Alternative and Bases for Use

Inlet pressure for the Group A tests will be measured with gauges that have a full-scale of 0 to 3.5 psig.

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

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6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to portions of P-4 was approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

RELIEF REQUEST P-5

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Containment Spray

Group: B

Class: 2

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 <u>Reason for Request</u>

The test loop for the containment spray pumps is shown in Figure P-5.1. The containment spray pumps take suction from the refueling water storage tank (RWST) and discharge back to the RWST. With this test loop, it is difficult to consistently achieve reference flow rates that are within 20% of the pump design flow rate of 2000 gpm. Therefore, relief from the Code requirement is requested for Surry Unit 1.

Pump Design Flow Rate Basis

The containment spray system resistance limits a single pump delivery flow to 2000 gpm at 238.6 total developed head (TDH) in feet. This TDH corresponds to the accident analysis conditions when a containment spray pump starts and is subject to its most limiting operating conditions. Specifically, the Surry accident analysis assumes a minimum pump flow rate of 2000 gpm when the RWST, which is the containment spray suction source, is at the Technical Specifications minimum allowable level and the containment is at the design pressure of 45 psig.

As containment pressure decreases during a design basis accident following spray actuation, the containment spray pump TDH will decrease and the flow will increase above 2000 gpm as the pump operating point moves out on the pump curve. The pump response along the pump curve as modeled in the accident analysis is for a degraded pump. The actual pump head performance at 1600 gpm (the approximate test flow rate) is well above the corresponding head of the accident analysis degraded pump curve requirement.

A model of the containment spray system hydraulic circuit for each pump has confirmed the limiting accident analysis assumptions for containment spray pump flow versus head.

An additional consideration is that the containment spray pumps are expected to operate for less than 2 hours after a design basis accident. Accident analyses demonstrate that the RWST is exhausted quickly, depending on the number of containment spray and safety injection pumps that are running. The operators stop the containment spray pumps when RWST level reaches less than 3% indication.

Surry has determined that the containment spray pump design flow rate is 2000 gpm based on the plant safety analyses. The Code requires that the containment spray pump flow be tested within 80% of the design flow rate, or 1600 gpm. The average test flow rate for tests conducted since 2004 is 1593 gpm for Unit 1. The containment spray system is a fixed resistance system and the test flow rates tend to vary several gpm based on initial RWST level. Although the Unit 1 pumps have met the Code requirements, there are tests where 1600 gpm cannot be achieved.

Pre-Operational Testing

During the construction period, the containment spray headers were fitted with blind flanges that allowed the connection of temporary drain lines for initial testing of the subsystem. After the subsystem was completely installed, temporary connections between the spray headers were made using blind flanges on the spray headers, and pipe plugs were placed in the spray nozzle sockets. The containment spray pumps were started and operated over a range of flows, circulating water through the spray header supply line to the spray headers, out the temporary drain connections and to the opposite spray headers. The water was then directed to the RWST through the 4" recirculation line. Although the preoperational test did not produce full flow conditions, it provided a full-system capability test and demonstrated that the pumps were operating on the manufacturer pump curve. It also flushed the system to remove any particulate matter that could plug the spray nozzles at a future time. At the completion of this test, the temporary drain connections were removed, the blind flanges replaced. the pipe plugs removed, the nozzle pipe nipple inspected, and the spray nozzles installed.

Additional Full Flow Testing

In addition to the pre-operational testing performed on the containment spray system, a special RWST/Chemical Addition Tank draw down test was performed on April 30, 1980 using pump 2-CS-P-1A at flow rates substantially greater than the current achievable test flow rates. The purpose of the draw down test was to validate the analytical model used to perform the Surry site boundary dose analysis. Temporary 8" discharge piping was installed from the bonnet of check valve 2-CS-13, located downstream of the pump and inside containment at elevation 15' 9", to the reactor cavity at elevation 48' 1". Flow rates up to 2133 gpm were achieved during the test. This test demonstrates that the containment spray pump 2-CS-P-1A has been operated at design flow conditions in its installed configuration. The four containment spray pumps on Surry Units 1 and 2 are essentially identical, so the conclusion from the Unit 2 containment spray pump test that pump 2-CS-P-1A can achieve the design flow rate is applicable to the Unit 1 pumps.

Surry Predictive Maintenance Program

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

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

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

Detection of Pump Degradation

Testing the containment spray pumps at or near 1600 gpm will detect degradation in performance and verify that the pumps are operating acceptably. The 1600 gpm point (50% of the point of best efficiency of approximately 3200 gpm) is in a portion of the pump curve where degradation will be detected. Also, there is significant margin available above the minimum acceptable pump curve when testing the pump on the test loop. For pump 1-CS-P-1A, the margin is approximately 20 feet of TDH and for pump 1-CS-P-1B the margin is approximately 18 feet. A decrease in the available margin is detectable before the pump performance becomes unacceptable.

Figure P-5.2 shows the nominal vendor pump curve for 1-CS-P-1A, a typical test point, the minimum test point below which is unacceptable performance, and the design point (2000 gpm at 238.6 feet TDH), and Figure P-8.3 shows the same information for 1-CS-P-1B. The proposed alternative to ISTB-3300(e)(1) provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

A comprehensive test reference flow rate will be established for each pump at or near 80% of the pump design flow rate but not less than 76% of design flow rate (1520 gpm).

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

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300(e)(1) identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i) we request relief from the specific ISTB Code requirements identified in this relief request.

6.0 <u>Duration of the Proposed Alternative</u>

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The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Unit 1 – American Society of Mechanical Engineers Inservice Testing Program Fourth 10-Year Interval Request for Revised Relief P-8 (TAC NO. MC6528)" dated April 8, 2005.

The following relief requests for other plants that are similar to portions of P-5 were approved by the NRC.

Pump Relief Request P-6 for North Anna 1 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777) and applies to ISTB-3300(e)(1).

Pump Relief Request PRR11 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

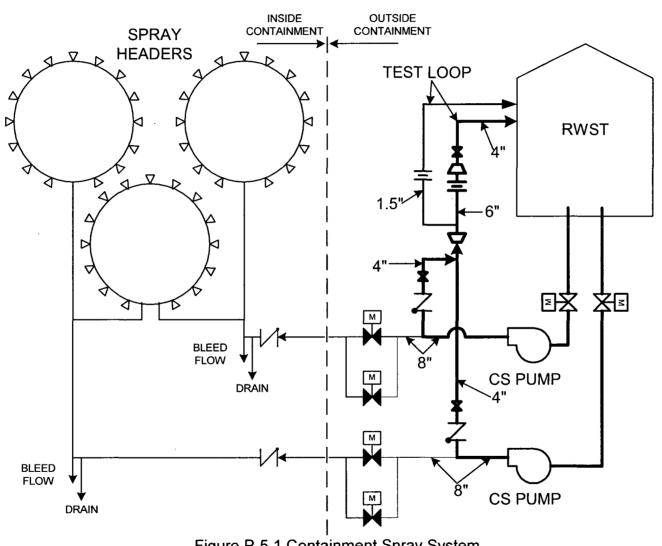


Figure P-5.1 Containment Spray System

Relief Request P-5 (Cont.)

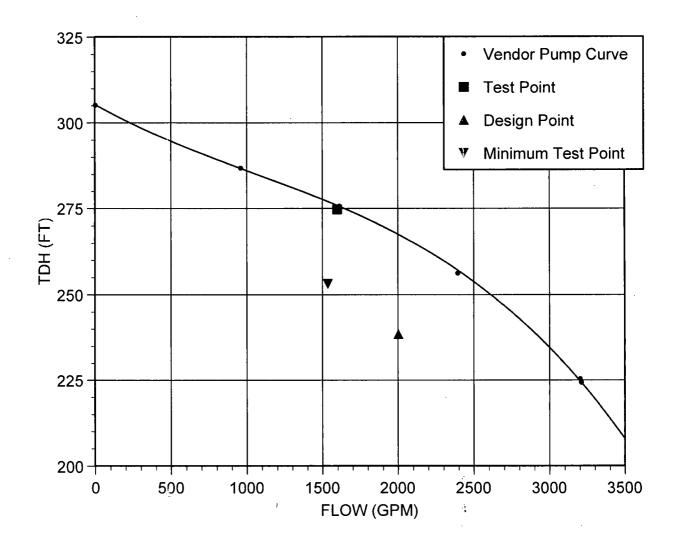


Figure P-5.2 Containment Spray Pump 1-CS-P-1A

Relief Request P-5 (Cont.)

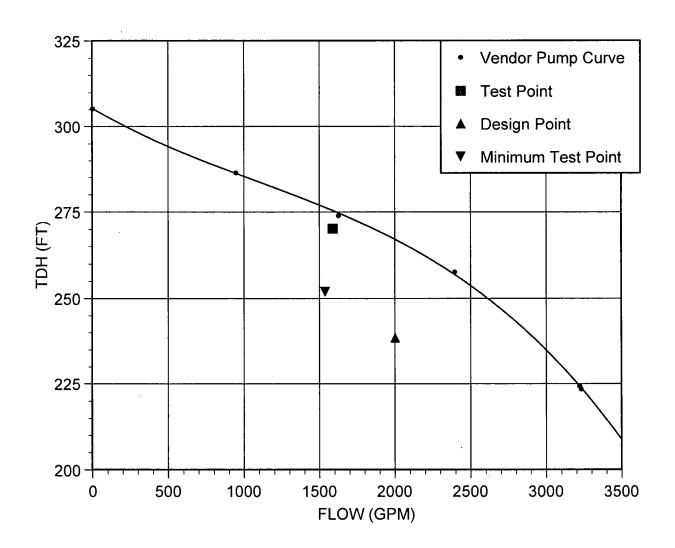


Figure P-5.3 Containment Spray Pump 1-CS-P-1B

RELIEF REQUEST P-6

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-6.1

4.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

5.0 Applicable Code Requirements

ISTB-5123, "Comprehensive Test Procedure" refers to Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

ISTB-5223, "Comprehensive Test Procedure" refers to Table ISTB-5221-1, "Vertical Line Shaft Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

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For some pump tests, Surry Power Station has had difficulty implementing the upper required action range limit of 1.03% above the established hydraulic parameter reference value for the comprehensive pump test. The difficulty arises when normal data scatter yields (1) a low measured reference value, and (2) high measured values for subsequent inservice tests. In these cases, some of the test data trend high near the upper required action range limit and may exceed the upper limit on occasion. The problem can be more severe for pumps with low differential pressures (50 psid or less) due to the smaller acceptable range.

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5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-6.1, an upper required action limit of 1.06% times the reference value will be applied to the comprehensive pump test in accordance with ASME OM Code Case OMN-19, Alternative Upper Limit for the Comprehensive Pump Test. Also, for pumps that have a design basis accident flow rate, a pump periodic verification (PPV) test will be performed. Table P-6.1 identifies the pumps that have a design basis accident flow rate and indicates that a pump periodic verification test will be performed for these pumps.

Table P-6.1 includes all of the ASME Code Class pumps in the Surry IST program except for the containment spray (CS) pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the existing test loop configuration. Therefore, the upper limit of 1.03% times the reference value will still be applied to the comprehensive pump test for the CS pumps. The reason the remaining pumps are included in the relief request is that data scatter can affect future tests for any of these pumps.

The following requirements shall be applied to the PPV test.

- 1) Apply the PPV test to pumps with a design basis accident flow rate as identified in Table P-6.1.
- 2) Performed the PPV test at least once every 2 years.
- 3) Determine if a PPV test is required before declaring a pump operable following replacement, repair, or maintenance on the pump.
- 4) Declared the pump inoperable if the PPV test flow rate and associated differential pressure cannot be achieved.
- 5) Maintain the necessary records for PPV test, including the applicable test parameters (e.g., flow rate and the associated differential pressure and speed for variable speed pumps) and their basis.
- 6) Account for the PPV test instrument accuracies in the test acceptance criteria.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 and ISTB-5223, and Table ISTB-5121-1 and Table ISTB-5221-1 as described above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-6 requests relief from the specific ISTB requirements identified in this request.

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6.0 Duration of the Proposed Alternative

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The proposed alternative described in Relief Request P-6 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

None

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Table P-6.1

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-CC-P-1A 1-CC-P-1B	Component - Cooling	3	Component Cooling Water Pumps	Cenirifugal	None	No
1-CC-P-2A 1-CC-P-2B	Component Cooling	3	Component Cooling Water Pump to Charging Pump	Centrifugal	30	Yes
1-CH-P-1A 1-CH-P-1B 1-CH-P-1C	Chemical and Volume Control/Safety Injection	2	High Head Safety Injection/Charging Pump	Centrifugal	436	Yes
1-CH-P-2A 1-CH-P-2B	Chemical and Volume Control	2	Boric Acid Transfer Pumps	Centrifugal	None	No
1-FW-P-2	Auxiliary Feedwater	3	Auxiliary Feedwater Turbine Driven Pump	Centrifugal	400	Yes
1-FW-P-3A 1-FW-P-3B	Auxiliary Feedwater	3	Auxiliary Feedwater Motor Driven Pump	Centrifugal	300	Yes
1-RH-P-1A 1-RH-P-1B	Residual Heat Removal	2	Residual Heat Removal Pump	Centrifugal	None	No
1-RS-P-1A 1-RS-P-1B	Recirculation Spray	3	Inside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	3100	Yes
1-RS-P-2A 1-RS-P-2B	Recirculation Spray	3	Outside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	2900	Yes
1-SI-P-1A 1-SI-P-1B	Safety Injection	3	Low Head Safety Injection Pump	Vertical Line Shaft Centrifugal	2901	Yes

Table P-6.1 (Cont.)

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-SW-P-1A 1-SW-P-1B 1-SW-P-1C	Service Water	3	Emergency Service Water Pump	Vertical Line Shaft Centrifugal	14550	Yes
1-SW-P-10A 1-SW-P-10B	Service Water	3	Service Water Pump to Charging Pump	Centrifugal	42	Yes
1-VS-P-1A 1-VS-P-1B 1-VS-P-1C 1-VS-P-1D 1-VS-P-1E	Ventilation	3	Main Control Room Air Conditioning System Condenser Water Pumps	Centrifugal	None	No
1-VS-P-2A 1-VS-P-2B 1-VS-P-2C 1-VS-P-2D 1-VS-P-2E	Ventilation	3	Main Control Room Air Conditioning System Chilled Water Pumps	Centrifugal	None	No

RELIEF REQUEST P-7

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Service Water

Group: B

Class: 3

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 <u>Reason for Request</u>

The emergency service water pumps take suction from the James River and discharge into the intake canal. The James River near the plant is subject to a tide level variation of approximately five feet. Therefore, the total static head for the system can vary from test to test. There are no valves in the lines to throttle flow and to compensate for the change in system static head. The only way to duplicate flow and differential pressure from test to test is to perform the test at the same tide level each time. Trying to perform this test within a small enough

tide level range to produce repeatable results has proven impractical. To compensate for the change in total system head, a pump reference curve will be prepared based on test results taken at different tide levels. Tests will be conducted within the tide level limits of the curve, and results will be compared to acceptance criteria based on the reference curve and the ranges given in Table ISTB-5200-1. Inlet pressure will be calculated from tide level. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

5.0 Proposed Alternative and Bases for Use

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. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-7 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-7 will no longer be necessary.

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7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to P-7 were approved by the NRC.

Pump Relief Request P-3 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR4 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604). PRR4 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-7 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-8

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Main Control Room Air Conditioning

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 <u>Reason for Request</u>

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.

5.0 Proposed Alternative and Bases for Use

The chilled water circulating pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-8 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-8 will no longer be necessary.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-8 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

RELIEF REQUEST P-9

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Component Cooling

Group: A

Class: 3

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

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason 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.

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RELIEF REQUEST P-9 (Cont.)

5.0 Proposed Alternative and Bases for Use

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-9 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-9 will no longer be necessary.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-9 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

RELIEF REQUEST P-9 (Cont.)

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-10

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

Function: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system.

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 <u>Reason for Request</u>

Plant conditions may not be the same as when the reference values were established when performing the quarterly Group A tests. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system and causes undesirable perturbations within the Reactor Coolant System.

Therefore, pumps will be tested in a range of flows and the results will be compared to acceptance criteria based a portion of the pump curve and the hydraulic acceptance criteria given in ISTB.

Past vibration data for the subject pumps have been reviewed and it has been determined that pump vibration does not vary significantly with flow rate over the range of the test flow rates. This alternative to the requirements of ISTB-5121 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

The charging/safety Injection pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-10 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-10 will no longer be necessary.

7.0 <u>Precedents</u>

The following relief requests for other plants that are similar to P-10 were approved by the NRC.

Pump Relief Request P-8 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST V-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control and Safety Injection

Category: A for 1-CH-MOV-1115B and D, and 1-SI-MOV-1885A-D AC for 1-SI-25

Class: 2

Function: RWST Isolation Valves

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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ISTC-3630(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in ISTC-3630(e) above shall be declared inoperable and be either repaired or replaced.

4.0 Reason for Request

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

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

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

5.0 Proposed Alternatives and Bases for Use

3.5

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

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

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6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternatives described in Relief Request V-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to V-1 was approved by the NRC.

Pump Relief Request V-1 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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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.

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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

Group: B

Class: NC

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

ISTB Code Requirements Which Will Not Be Met

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

ISTB-3310 requires that after maintenance, repair, or pump replacement either a Group A or Comprehensive Test shall be run. If there is a deviation from previous reference value, this test will be used to set new reference criteria.

Table ISTB-3400-1 requires that a comprehensive test be run biennially.

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

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

Basis for Alternate Testing For ISTB-3300

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

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

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

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

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

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

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

Basis for Alternate Testing For ISTB-3310

A Group B test with vibrations measurements will be used in lieu of the Group A or Comprehensive test after maintenance, repairs, or pump replacement. The basis for using the Group B test with vibration measurements in lieu of the Group A or Comprehensive test is given below.

Basis for Alternate Testing For Table ISTB-3400-1

For positive displacement pumps, the comprehensive test acceptable range for flow rate is 0.95 to 1.03 times the reference value as described in Table ISTB-5321-1. The flow rate reference valves (Q_r) for the fuel oil transfer pumps are typically between 9 and 10 gpm, which translates to total acceptable bands from 0.72 gpm (for $Q_r = 9$ gpm) to 0.8 gpm (for $Q_r = 10$ gpm). A review of test data shows that seasonal variations in

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

recorded flow rates either come close to or exceed the acceptable bands allowed by the Code. The Group A test acceptable range for flow rate is 0.95 to 1.1 times the reference value as described in Table ISTB-5321-1. Although this range bounds the seasonal variations, there is little margin on the low end of the band.

The Group B test acceptable range for flow rate is 0.9 to 1.1 times the reference value as described in Table ISTB-5321-1. This acceptable range translates to total acceptable bands from 1.8 gpm (for Qr = 9 gpm) to 2.0 gpm (for Qr = 10 gpm). These acceptable bands bound the seasonal variations in recorded flow rates. It should be noted that the pumps are tested every quarter at a flow rate that satisfies the comprehensive test requirements for flow rate.

Applying the comprehensive test or Group A acceptance criteria to the fuel oil transfer pumps could result in pumps failing the test and being declared inoperable, when in fact the pumps are operating acceptably. The pumps are required to deliver 3.42 gpm but were designed for a flow rate of 5 gpm of fuel oil. As described above, the pumps deliver from 9 to 10 gpm, so there is a wide margin of over capacity for the fuel oil transfer pumps.

The Group B test differs from the Group A and Comprehensive test in that it does not require discharge pressure to be compared to acceptance criteria. The Group A test has an acceptable range of 0.93 to 1.10 times the reference discharge pressure and the Comprehensive test has a range of 0.95 to 1.03 times the reference for discharge pressure. The acceptable range for discharge pressure for a comprehensive test would be 0.88 psi (P_r =11psi). As positive displacement pumps, the flow rate is almost constant over the range of discharge pressures, giving an almost vertical line for the pump curve. System engineering has determined that flow, not discharge pressure is the critical attribute for validating the design function of these pumps and is the only hydraulic parameter that needs to be measured to detect pump degradation. Therefore, the Group B hydraulic acceptance criteria, which exclude discharge pressure, will be used.

The Group B test does not require vibration data. However, to enhance the ability to detect degradation, vibration measurements will be taken in accordance with the requirements of Table 5321-1 for the Comprehensive test during the quarterly Group B test.

Given, the wide margin of over capacity for the fuel oil pumps, and the inclusion of vibration testing, the Group B test is adequate for detecting degradation in the positive displacement fuel oil transfer pumps in lieu of the comprehensive test. This program change was initiated by discussions with System Engineering and Margin Management Issue EE03.

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

Basis for Alternate Testing For ISTB-3510(e)

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

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

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

Alternate Testing

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

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

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

The Group B test with Comprehensive test vibration criteria will be used for the quarterly Group B test, tests after maintenance, repairs, or pump replacement, and the Comprehensive test.

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 1 Technical Specification 6.4.I describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 valves. The Surry Unit 1 Inservice Testing (IST) Program for Valves has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTC and Technical Specifications.

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

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

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

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

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

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

4.2 PROGRAM IMPLEMENTATION

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

1) Valve Exercise Tests,

2) Valve Leakage Tests and

3) Safety Valve Tests

The Exercise Tests verify that:

1) the valve strokes properly,

2) the valve responds to control commands,

3) the valve stroke time is within specific limits and

4) remote position indication accurately reflects the observed valve position. Remote valve position indication will be verified every two years.

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 ISTC-3521(g) which states that:

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

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

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

To test check values to the full open position, the maximum required accident condition flow must be measured through the value. In certain cases, this flow cannot be practically established or verified. Per ISTC-5221(c), disassembly and examination of the check values on a sampling basis is an acceptable alternative testing method.

As allowed by ISTC-5222, "Condition-Monitoring Program," Surry Power Station will apply Appendix II, "Check Valve Condition Monitoring Program," of the ASME OM Code, Subsection ISTC as an alternative to the requirements of ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550 and ISTC-5221, subject to the following provisions and limitations.

4.3 PROGRAM ADMINISTRATION

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

4.4 VALVE INSERVICE TEST TABLE

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

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

- <u>Valve Number</u> Each valve in the plant has a unique "mark" number which identifies the system to which the equipment belongs and type of equipment.
- Drawing and Sheet Number, Coordinate The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.
- 3) <u>Valve Type</u> 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 OperatedAO - Pneumatic (Air Operated)MAN - Manually OperatedSO - Electronic solenoid Operated Valves

- Size Nominal pipe diameter to which valve connects is given in inches.
- 5) <u>Code Class</u> ASME Code Class of each valve as per 10 CFR 50.55a and Regulatory Guide 1.26.

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

- 6) <u>Category</u> Categories are defined by ISTC-1300. Each valve has specific testing requirements which are determined by the category to which it belongs. Valves marked with an "E" are passive valves.
- Isolation Valve Type Valves that are assigned a maximum leakage. The following abbreviations are used to describe the main isolation valve types:

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

PIV - Pressure Isolation Valve 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.

8) <u>Test Required</u> - Testing requirements identified for the valves are identified here.

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

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

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

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

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

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

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

- 9) <u>Test Position</u> The following abbreviations are used to describe normal valve positions to which the valves are tested (including the valve safety position):
 - O Open C - Close OC - Open and Close P - Partially Open
- 10) <u>Test Frequency</u> The following abbreviations are used to describe the test frequency:
 - 03 Nominally every three months
 - 24 Every 24 months

60 - Every 60 months

120 - Every 120 months

CM - Per the test frequency determined by the Appendix II, Check Valve Condition Monitoring program

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

RR - Every reactor refueling outage

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

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- 11) <u>Relief Request Reference</u>
- 12) Cold Shutdown Justification Reference
- 13) <u>Reactor Refueling Justification Reference</u>
- 14) Non-Code Alternative Test Reference
- 15) <u>Function</u> A brief description of the function of the valve.

				v	ALVEI	NSERV	ICE LEST IN	ADLC					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	 NC ALT TEST VNC-
1-BD-TV-100A	11448-CBM-124A	1 OF 4	C-7	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11	
÷.	"A" STEAM GENEF VALVE	RATOR BL	OWDOW	N, INSIDE CO	NTAINME	ENT ISOL	ATION						
1-BD-TV-100B	11448-CBM-124A	1 OF 4	C-6	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11	
	"A" STEAM GENEF VALVE	RATOR BL	.OWDOW	N, OUTSIDE C	CONTAIN	MENT IS	OLATION						
1-BD-TV-100C	11448-CBM-124A	2 OF 4	C-7	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11	
	"B" STEAM GENEF VALVE	RATOR BL	OWDOW	N, INSIDE CO	NTAINME	ENT ISOL	ATION	Vr	00	27			
1-BD-TV-100D	11448-CBM-124A	2 OF 4	C-6	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11	
	"B" STEAM GENER VALVE	RATOR BL	.OWDOW	N, OUTSIDE C	CONTAIN	MENT IS	OLATION	vi	00	24			
1-BD-TV-100E	11448-CBM-124A	3 OF 4	C-7	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11	
	"C" STEAM GENER VALVE	RATOR BI	OWDOW	N, INSIDE CO	NTAINME	ENT ISOL	ATION	vi	00	27			
1-BD-TV-100F	11448-CBM-124A	3 OF 4	C-6	AO GATE	2	2	В	EV FS ST	C C C	CS CS CS		11 11 11	

				v		NOERV	ICE LEST L	ADLL						
							ISO				REL	CS	RR	NC ALT
VALVE	DRAWING			VALVE	VALVE	ASME	ISTC VALVE	TEST	TEST	TEST	REQ	JUST	JUST	TEST
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
1-BD-TV-100F	11448-CBM-124A	3 OF 4	C-6	AO GATE	2	2	В	VP	OC	24				
	"C" STEAM GENER VALVE	RATOR BL	OWDOW	N, OUTSIDE C	ONTAIN	MENT IS	OLATION							

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VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-0001	11448-CBM-072A	2 OF 7 F-7	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "A COOLERS, ISOL C		TATOR SHROUI	D & THE	RM BARI	RIER		Ŭ	CIVI				
1-CC-0058	11448-CBM-072A	3 OF 7 F-7	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "B COOLERS, ISOL C		TATOR SHROU	O & THE	RM BARI	RIER		0	Civi				
1-CC-0059	11448-CBM-072A	4 OF 7 F-7	CHECK VALVE	6	3	С	cv	C O	CM CM				
	CC SUPPLY TO "C COOLERS, ISOL C		TATOR SHROU	D & THE	RM BAR	RIER		U	Civi				
1-CC-0176	11448-CBM-072A	1 OF 7 F-7	CHECK VALVE	18	3	С.	CV	C O	CM CM			,, .,	
	CC SUPPLY TO RI	HR HEAT EXCHAN	NGER CHECK V	ALVE				0	CIVI				
1-CC-0177	11448-CBM-072A	1 OF 7 F-7	CHECK VALVE	18	3	С	CV	C O	CM CM				
	CC SUPPLY TO RI	HR HEAT EXCHAN	NGER CHECK VA	ALVE				0	CIM				
1-CC-0181	11448-CBM-072A	1 OF 7 A-6	MANUAL BFLY	′ 18	3	В	EV	C O	24 24				
	CC RETURN FROM	M RHR HEAT EXC	HANGER MANU	AL ISOL	ATION V	ALVE		0	24				
1-CC-0185	11448-CBM-072A	1 OF 7 A-4	MANUAL BFLY	′ 18	3	В	EV	C O	24 24 24				
	CC RETURN FROM	M RHR HEAT EXC	HANGER MANU	AL ISOL	ATION V	ALVE		0	24				
1-CC-0224	11448-CBM-072B	2 OF 3 D-2	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "C ISOLATION CHEC		OLING COILS, II	NSIDE C	ONTAIN	MENT		U	UIVI				
1-CC-0233	11448-CBM-072B	2 OF 3 D-6	CHECK VALVE	6	3	С	cv	C O	CM CM				*****

				V		NJERV	ICE LEST I	ADEL						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CC SUPPLY TO "B ISOLATION CHEC		AIR CO	OLING COILS, IN	NSIDE C	ONTAIN	MENT						·	
1-CC-0242	11448-CBM-072B	2 OF 3	D-8	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "A ISOLATION CHEC		AIR CO	OLING COILS, IN	NSIDE C	ONTAIN	MENT		Ū	01M				
1-CC-0557	11448-CBM-072D	1 OF 5	D-5	CHECK VALVE	18	3	С	CV	C O	CM CM				
	"A" COMPONENT	COOLING	PUMP [DISCHARGE CH	ECK VAI	LVE			Ū	OW				
1-CC-0563	11448-CBM-072D	1 OF 5	C-5	CHECK VALVE	18	3	С	CV	C O	CM CM				
	"B" COMPONENT	COOLING	PUMP (DISCHARGE CHE	ECK VA	LVE			Ũ	Citi				
1-CC-0752	11448-CBM-071B	2 OF 2	C-3	CHECK VALVE	2	3	С	CV	C O	CM CM				
	CHARGING PUMP	COOLING	WATE	R PUMP DISCHA	RGE CH	HECK VA	LVE		Ũ	0				
1-CC-0764	11448-CBM-071B	2 OF 2	C-7	CHECK VALVE	2	3	С	CV	C O	CM CM				
	CHARGING PUMP	COOLING	WATE	R PUMP DISCHA	RGE CI	HECK VA	LVE		•	•				
1-CC-0805	11448-CBM-072C	4 OF 4	C-5	CHECK VALVE	1	3	С	CV	C O	CM CM				
		SEAL CO	OLING S	SURGE TANK M	AKEUP		ALVE		-					
1-CC-1105	11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	С	CV	C O	CM CM				
	COMPONENT COO CHECK VALVE	OLING WA	TER TO	RCP THERMAL	BARRIE	ER ISOLA			Ū					
1-CC-1106	11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	С	CV	C O	CM CM				
	COMPONENT COO CHECK VALVE	OLING WA	TER TO	RCP THERMAL	BARRIE	êr Isola	TION		Ŭ	CIWI				

			V P	ALVEI	NJERV		ADLE			051	~~		
DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE	TEST TYPE		-	REL REQ V-	JUST	JUST	NC ALT TEST VNC-
11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	С	CV	с С	CM				
COMPONENT CO CHECK VALVE	OLING WA	ATER TO	RCP THERMAL	BARRII	ER ISOLA	TION		0	CIVI				
11448-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	С	CV	C	CM				
COMPONENT COO CHECK VALVE	OLING WA	ATER TO	RCP THERMAL	BARRI	ER ISOLA	TION		0	CIVI				
11448-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	С	CV	C O	CM CM				
COMPONENT CO CHECK VALVE	OLING WA	ATER TO	RCP THERMAL	BARRI	ER ISOL4	TION		Ū	CI.				
11448-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	С	cv	c	CM				
COMPONENT COO CHECK VALVE	OLING WA	ATER TO	RCP THERMAL	BARRII	ER ISOLA	ATION		0	CIVI				
11448-CBM-071B	2 OF 2	D-5	AO GATE	1	3	В	EV	с С	CS		 15 15		
							FS						
							ST	č	NA	NOTE 1	.0		
								0	NA	NOTE 1			
	-		SURGE TANK LE	EVEL								•••	
					-	-	SP	0	120	NOTE 2			
						-	SP	0	120	NOTE 2			
						C /ALVE	SP	0	120	NOTE 2			
	NUMBER 11448-CBM-072A COMPONENT COO CHECK VALVE 11448-CBM-072A COMPONENT COO CHECK VALVE 11448-CBM-072A COMPONENT COO CHECK VALVE 11448-CBM-072A COMPONENT COO CHECK VALVE 11448-CBM-072B REACTOR CONTA 11448-CBM-072B REACTOR CONTA 11448-CBM-072B	NUMBERSHEET11448-CBM-072A2 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-072A2 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-072A3 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-072A3 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-072A4 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-072A4 OF 7COMPONENT COOLING WA CHECK VALVE11448-CBM-071B2 OF 2CHARGING PUMP SEAL CC CONTROL/ISOLATION VALVE11448-CBM-072B2 OF 3REACTOR CONTAINMENT A11448-CBM-072B2 OF 3	NUMBERSHEET COOR11448-CBM-072A2 OF 7C-6COMPONENT COOLING WATER TO CHECK VALVE11448-CBM-072A2 OF 711448-CBM-072A2 OF 7C-6COMPONENT COOLING WATER TO CHECK VALVE11448-CBM-072A3 OF 711448-CBM-072A3 OF 7C-6COMPONENT COOLING WATER TO CHECK VALVE11448-CBM-072A4 OF 711448-CBM-072A4 OF 7C-6COMPONENT COOLING WATER TO CHECK VALVE11448-CBM-071B2 OF 211448-CBM-071B2 OF 2D-5CHARGING PUMP SEAL COOLING S CONTROL/ISOLATION VALVE11448-CBM-072B2 OF 3CHARGING PUMP SEAL COOLING S CONTROL/ISOLATION TAIR REC11448-CBM-072B2 OF 3CHARGING PUMP SEAL COOLING S CONTROL/ISOLATION TAIR REC11448-CBM-072B2 OF 3CHARGING CONTAINMENT AIR REC11448-CBM-072B2 OF 3C-5	DRAWING NUMBERSHEET COORVALVE TYPE11448-CBM-072A2 OF 7C-6CHECK VALVECOMPONENT COOLING WATER TO RCP THERMAL CHECK VALVE11448-CBM-072A2 OF 7C-6CHECK VALVE11448-CBM-072A2 OF 7C-6CHECK VALVECOMPONENT COOLING WATER TO RCP THERMAL CHECK VALVE11448-CBM-072A3 OF 7C-6CHECK VALVE11448-CBM-072A3 OF 7C-6CHECK VALVE11448-CBM-072A4 OF 7C-6CHECK VALVE11448-CBM-072A4 OF 7C-6CHECK VALVE11448-CBM-071B2 OF 2D-5AO GATE11448-CBM-071B2 OF 2D-5AO GATE11448-CBM-072B2 OF 3C-7RELIEF VALVE11448-CBM-072B2 OF 3C-5RELIEF VALVE11448-CBM-072B2 OF 3C-5RELIEF VALVE11448-CBM-072B2 OF 3C-4RELIEF VALVE	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZE11448-CBM-072A2 OF 7C-6CHECK VALVE2COMPONENT COOLING WATER TO RCP THERMAL BARRING CHECK VALVE2 OF 7C-6CHECK VALVE211448-CBM-072A2 OF 7C-6CHECK VALVE2COMPONENT COOLING WATER TO RCP THERMAL BARRING CHECK VALVE3 OF 7C-6CHECK VALVE211448-CBM-072A3 OF 7C-6CHECK VALVE211448-CBM-072A3 OF 7C-6CHECK VALVE211448-CBM-072A4 OF 7C-6CHECK VALVE211448-CBM-072A4 OF 7C-6CHECK VALVE211448-CBM-071B2 OF 2D-5AO GATE1CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE11448-CBM-072B2 OF 3C-7RELIEF VALVE0.7511448-CBM-072B2 OF 3C-5RELIEF VALVE0.75REACTOR CONTAINMENT AIR RECIRCULATION COOLER IN11448-CBM-072B2 OF 3C-4RELIEF VALVE0.75	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEVALVE SIZESAME CLASS11448-CBM-072A2 OF 7C-6CHECK VALVE23COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLA CHECK VALVE2 OF 7C-6CHECK VALVE2311448-CBM-072A2 OF 7C-6CHECK VALVE23COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLA CHECK VALVE11448-CBM-072A3 OF 7C-6CHECK VALVE2311448-CBM-072A3 OF 7C-6CHECK VALVE233COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLA CHECK VALVE11448-CBM-072A4 OF 7C-6CHECK VALVE2311448-CBM-072A4 OF 7C-6CHECK VALVE23333COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLA CHECK VALVE133311448-CBM-071B2 OF 2D-5AO GATE1311448-CBM-071B2 OF 2D-5AO GATE13CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE13311448-CBM-072B2 OF 3C-7RELIEF VALVE0.75311448-CBM-072B2 OF 3C-5RELIEF VALVE0.75311448-CBM-072B2 OF 3C-5RELIEF VALVE0.75311448-CBM-072B2 OF 3C-4RELIEF VALVE0.753	ISO NUMBER ISO SHEET COOR VALVE TYPE VALVE SIZE CLASS ISTC VALVE ISTC VALVE 11448-CBM-072A 2 OF 7 C-6 CHECK VALVE 2 3 C COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE 2 3 C 11448-CBM-072A 2 OF 7 C-6 CHECK VALVE 2 3 C COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE 2 3 C 11448-CBM-072A 3 OF 7 C-6 CHECK VALVE 2 3 C COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE 11448-CBM-072A 3 OF 7 C-6 CHECK VALVE 2 3 C 11448-CBM-072A 4 OF 7 C-6 CHECK VALVE 2 3 C 11448-CBM-072A 4 OF 7 C-6 CHECK VALVE 2 3 C 11448-CBM-072A 4 OF 7 C-6 CHECK VALVE 2 3 C 11448-CBM-072B 2 OF 2 D-5 AO GATE 1 3 B CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROLISOLATION VALVE 2 OF 3	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEASMEISTC VALVE TYPETEST TYPE11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCV11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCV11448-CBM-072A3 OF 7C-6CHECK VALVE23CCV11448-CBM-072A3 OF 7C-6CHECK VALVE23CCV11448-CBM-072A4 OF 7C-6CHECK VALVE23CCV11448-CBM-072A4 OF 7C-6CHECK VALVE23CCV11448-CBM-072A4 OF 7C-6CHECK VALVE23CCV11448-CBM-072A4 OF 7C-6CHECK VALVE23CCV11448-CBM-072B2 OF 2D-5AO GATE13BEV11448-CBM-072B2 OF 3C-7RELIEF VALVE0.753CSP11448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSP11448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSP11448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSP11448-CBM-072B2 OF 3 <td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE VALVEVALVE SIZE CLASS CLASS CAT CAT CAT CALVETEST TYPETEST POS11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVC O11448-CBM-072A CHECK VALVE3 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE CALVE3CCVC O11448-CBM-071B CONTROL/ISOLATION VALVE2 OF 2A O GATE CONTROL/ISOLATION VALVE3BEV C OC FS C C C O11448-CBM-072B CONTROL/ISOLATION VALVEC7.53CSPO11448-CBM-072B CONTROL/ISOLATION VALVEC7.53CSPO11448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVESPOO11448-CBM-072B CONTROL/ISOLATION AIR RECIRCULATION COOLER RELIEF VAL</br></br></br></br></br></br></br></br></br></td> <td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE VIPEASME SIZECLASS CLASS CAT TYPETEST TYPETEST POSTEST FREQ11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11448-CBM-072A3 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECCKCMCMCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS STC11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS STCNA ONACHARGING PUMP SEAL COOLING SURGE TANK LEVELCONTROLISOLATION VALVESPO12012011448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSPO12011448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSPO12011448-CBM-072B2</td> <td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZESIZE CLASSCAT TYPETEST TYPETEST TEST TYPEREL REQ V.11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE2 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE3 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A3 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCSSF11448-CBM-072B2 OF 3C-7RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-7RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-5RELIEF VALVE<td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZE SIZE CLASS CLASS CAT SIZE CLASS CLASS CAT CONTON CHECK VALVEISO TEST TEST TYPEREQ TEST TEST TYPEREQ FREQ CSVCSV CSV11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING SURGE TANK LEVEL CONTROL/SOLATION VALVE2 OF 3C-7RELIEF VALVESPO120NOTE 111448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-0</td><td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPETEST TEST TYPEREL REQ V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.</td></td>	DRAWING NUMBERSHEET COORVALVE TYPEVALVE VALVEVALVE SIZE CLASS CLASS CAT CAT CAT CALVETEST TYPETEST POS11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE CALVE23CCVC O11448-CBM-072A CHECK VALVE2 OF 7C-6CHECK VALVE COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION 	DRAWING NUMBERSHEET COORVALVE TYPEVALVE VIPEASME SIZECLASS CLASS CAT TYPETEST TYPETEST POSTEST FREQ11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11448-CBM-072A3 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECCKCMCMCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS STC11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS STCNA ONACHARGING PUMP SEAL COOLING SURGE TANK LEVELCONTROLISOLATION VALVESPO12012011448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSPO12011448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSPO12011448-CBM-072B2	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZESIZE CLASSCAT TYPETEST TYPETEST TEST TYPEREL REQ V.11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE2 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A2 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE3 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A3 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCSSF11448-CBM-072B2 OF 3C-7RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-7RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-5RELIEF VALVE0.753CSP0120NOTE 211448-CBM-072B2 OF 3C-5RELIEF VALVE <td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZE SIZE CLASS CLASS CAT SIZE CLASS CLASS CAT CONTON CHECK VALVEISO TEST TEST TYPEREQ TEST TEST TYPEREQ FREQ CSVCSV CSV11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING SURGE TANK LEVEL CONTROL/SOLATION VALVE2 OF 3C-7RELIEF VALVESPO120NOTE 111448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-0</td> <td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPETEST TEST TYPEREL REQ V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.</td>	ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZE SIZE CLASS CLASS CAT SIZE CLASS CLASS CAT CONTON CHECK VALVEISO TEST TEST TYPEREQ TEST TEST TYPEREQ FREQ CSVCSV CSV11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-072A COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM OCM11448-CBM-071B COMPONENT COOLING SURGE TANK LEVEL CONTROL/SOLATION VALVE2 OF 3C-7RELIEF VALVESPO120NOTE 111448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-072B REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF VALVE0.753CSPO120NOTE 211448-CBM-0	ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPETEST TEST TYPEREL REQ V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.V.

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				VA		NSERV	ICE	IESI I/	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR			ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-		RR JUST RRV-	NC ALT TEST VNC-
1-CC-RV-116A	11448-CBM-072A RCP THERMAL B/								SP	0	120	NOTE 2			
1-CC-RV-116B	11448-CBM-072A RCP THERMAL B/						C /E		SP	0	120	NOTE 2			
1-CC-RV-116C	11448-CBM-072A RCP THERMAL B/					_	С /Е		SP	0	120	NOTE 2			
1-CC-RV-119A	11448-CBM-072A "A" RHR HEAT EX					-	С		SP	0	120	NOTE 2			
1-CC-RV-119B	11448-CBM-072A "B" RHR HEAT EX	-				3 EF VALVE			SP	0	120	NOTE 2			
1-CC-RV-122	11448-CBM-072D COMPONENT CO				3	3	С		SP	0	120				
1-CC-RV-123	11448-CBM-072D COMPONENT CO					3	С		SP	0	120				
1-CC-RV-124	11448-CBM-072A COMPONENT CO				0.75	3	С		SP	0	120	NOTE 2			
1-CC-RV-138A	11448-CBM-072A REACTOR SHROI					3	С		SP	0	120	NOTE 2			
1-CC-RV-138B	11448-CBM-072A REACTOR SHROI					3	С		SP	0	120	NOTE 2			
1-CC-RV-138C	11448-CBM-072A REACTOR SHROI					3	С		SP	0	120	NOTE 2			
1-CC-TV-105A	11448-CBM-072A	2 OF 7	B-4	AO BALL	6	3	В		EV FS	C C	CS CS		2 2		

				v	ALVE I	NSERV	ICE TEST TA	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-CC-TV-105A	11448-CBM-072A	2 OF 7	B-4 ·	AO BALL	6	3	В	ST VP	C OC	CS 24		2	
	CC RETURN FROM OUTSIDE CONTAI				IROUD C	OOLERS	6,			-			
1-CC-TV-105B	11448-CBM-072A	3 OF 7	B-4	AO BALL	6	3	В	EV FS	C C	CS CS		2 2	
								ST VP	c oc	CS 24		2	
	CC RETURN FRO				IROUD C	OOLERS	5,	••	00	24			
1-CC-TV-105C	11448-CBM-072A	4 OF 7	B-4	AO BALL	6	3	В	EV	С	CS		2	
								FS ST	с с	CS CS		2 2	
	CC RETURN FROI OUTSIDE CONTAI				HROUD C	COOLERS	З,	VP	OC	24			
1-CC-TV-109A	11448-CBM-072A	1 OF 7	B-7	AO BFLY	18	3	В	EV	C O	03 03			
								FS	c	03			
								ST	č	03			
									0	03			
								VP	OC	24			
	CC RETURN FRO		HEAT EX	CHANGER, C	UTSIDE	CONTAI	NMENT						
1-CC-TV-109B	11448-CBM-072A	1 OF 7	C-7	AO BFLY	18	3	В	EV	C O	03 03			
								FS	č	03			
								ST	č	03			
								-	ō	03			
	CC RETURN FRO		HEAT EX	CHANGER, C	UTSIDE	CONTAI	NMENŤ	VP	OC	24			
 1-CC-TV-110A	11448-CBM-072B	2 OF 3	E-7	AO BFLY	6	3	В	EV	С	03			

				v	ALVEI	NSERV	ICE LEST IA	ADLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-CC-TV-110A	11448-CBM-072B	2 OF 3	E-7	AO BFLY	6	3	В	FS ST VP	C C OC	03 03 24			
	CC RETURN FROM			COOLING COI	LS, OUTS	SIDE							
1-CC-TV-110B	11448-CBM-072B	2 OF 3	E-5	AO BFLY	6	3	В	EV FS	C C	03 03			
								ST	С	03			
	CC RETURN FROM			COOLING COI	LS, OUTS	SIDE		VP	OC	24			
1-CC-TV-110C	 11448-CBM-072B	2 OF 3	E-4	AO BFLY	6	3	В	EV	С	03			
								FS ST	с с	03 03			
								VP	ŏč	24			
	CC RETURN FROM			COOLING COI	LS, OUTS	SIDE							
1-CC-TV-120A	 11448-CBM-072A	2 OF 7	C-5	AO GATE	1.5	3	B	EV	С	CS		13	
								ST VP	C OC	CS 24		13	
	CC RETURN FROM		OR COOL	ANT PUMP TH	IERMAL	BARRIEF	2	vr	00	24			
1-CC-TV-120B	 11448-CBM-072A	3 OF 7	C-5	AO GATE	1.5	3	B	EV	С	CS		13	
								ST VP	С ОС	CS 24		13	
	CC RETURN FROM		OR COOL	ANT PUMP TH	IERMAL	BARRIEF	2		00	24			
1-CC-TV-120C	11448-CBM-072A	4 OF 7	C-5	AO GATE	1.5	3	в	EV	с	CS		13	
								ST VP	C OC	CS 24		13	
	CC RETURN FROM		OR COOL	ANT PUMP TH	IERMAL	BARRIEF	٤	٧P	00	24			

VALVE	DRAWING			VALVE	VALVE	ASME	ISO ISTC VALVE	TEST	TEST	TEST	REL REQ	CS JUST	RR JUST	NC ALT TEST
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
1-CC-TV-140A	11448-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	В	EV	С	CS		13		
								FS	С	CS		13		
								ST	С	CS		13		
								VP	oc	24				
1993 C. 19	CC RETURN FROM	/ REACTO	JK COOL	ANT PUMP TH	EKMAL !	BARRIER	LINSIDE						1 A A A	
	CONTAINMENT IS					_	,							
 1-CC-TV-140B	CONTAINMENT IS		VALVE	AO GLOBE	3	3	B	EV	с	CS				
1-CC-TV-140B		OLATION	VALVE					EV FS	C C	CS CS		 13 13		
 1-CC-TV-140B		OLATION	VALVE					FS	-	CS				
1-CC-TV-140B		OLATION	VALVE					-	č			13		
1-CC-TV-140B		OLATION 1 OF 7	VALVE D-7	AO GLOBE	3	3	В	FS ST	c c	CS CS		13		

					V F		NOERV	ICE LEST I	NDLC					
	VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	RR JUST RRV-	NC ALT TEST VNC-
-	1-CH-076	11448-CBM-088A	1 OF 4	C-7	CHECK VALVE	2	2	С	cv	C O	CM CM		 	
		"A" BORIC ACID TI	RANSFER	PUMP	DISCHARGE CH	ECK VA	LVE							
	1-CH-092	11448-CBM-088A	1 OF 4	C-6	CHECK VALVE	2	2	С	cv	C O	CM CM		 	
		"B" BORIC ACID TI	RANSFER	PUMP	DISCHARGE CH	ECK VA	LVE							
	1-CH-225	11448-CBM-088B	1 OF 3	C-3	CHECK VALVE	1	2	С	cv	C O	CM CM		 	
		MANUAL EMERGE	NCY BOF	ATION	PATH CHECK VA	ALVE				Ŭ	OW			
	1-CH-227	11448-CBM-088B	2 OF 3	A-3	CHECK VALVE	2	2	С	CV	C O	CM CM		 	
		MAIN EMERGENC	Y BORAT	ON LINI	E TO CHARGING	PUMP	SUCTION	I CHECK		Ū	CIM			
	1-CH-228	11448-CBM-088B MANUAL EMERGE					2	В	EV	0	24		 	
	1-CH-229	11448-CBM-088B	2 OF 3	A-4	CHECK VALVE	1	2	С	CV	C O	CM CM		 	
		MANUAL EMERGE		ATION	PATH CHECK VA	ALVE, C	HARGING	G PUMP		Ū	CIVI			
	1-CH-230	11448-CBM-088B	1 OF 3	B-6	CHECK VALVE	4	2	С	CV	C O	CM CM		 	
		CHARGING PUMP CHECK VALVE	SUPPLY	FROM V	OLUME CONTR	OL TAN	K DISCH	ARGE		U	Civi			
	1-CH-256	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	2	2	С	cv	C	CM CM		 	
		"A" CHARGING PU	MP DISCI	HARGE	RECIRC LINE CH	IECK V	ALVE			0	CIVI			
	1-CH-258	11448-CBM-088B	2 OF 3	D-7	CHECK VALVE	3	2	C	CV	C O	CM CM		 	

				V P		NJERV	ICE LEST I	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"A" CHARGING PL	JMP DISC	HARGE	CHECK VALVE										
1-CH-265	11448-CBM-088B "B" CHARGING PL		· ·	CHECK VALVE		2 ALVE	С	CV	C O	CM CM				
1-CH-267	11448-CBM-088B "B" CHARGING PL			CHECK VALVE	3	2	С	CV	C O	CM CM				
1-CH-274	11448-CBM-088B "C" CHARGING PL					2 ALVE	С	CV	C O	CM CM				
1-CH-276	11448-CBM-088B "C" CHARGING PL			CHECK VALVE	3	2	С	CV	C O	CM CM				
1-CH-309	11448-CBM-088C MAIN CHARGING			CHECK VALVE	3	2	С	CV	C O	CM CM				
1-CH-FCV-1113A	11448-CBM-088B			AO GLOBE	1	2	В	EV FS ST VP	0 0 0 00	03 03 NA 24	NOTE 1			
	MANUAL EMERGE	ENCY BOF	RATION	PATH FLOW CO	NTROL	VALVE								
1-CH-FCV-1114A	11448-CBM-088B	1 OF 3	C-4	AO GLOBE	2	2	В	EV FS ST VP	C C C OC	03 03 NA 24	NOTE 1			
	PRIMARY GRADE VALVE	WATER S	SUPPLY	TO BORIC ACID	BLEND	er Isol	ATION							
1-CH-FCV-1160	11448-CBM-088C	1 OF 2	A-4	AO GLOBE	2	1	E	VP	oc	24				

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				V/	ALVEII	NSERV	ICE TEST IA	ARLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CHARGING FLOW VALVE	CONTRO	L TO LOC	P FILL HEADE	ER, OUTS	SIDE ISO	LATION							
1-CH-LCV-1460A	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	В	EV FS ST VP	C C C OC	CS CS CS 24		6 6 6		
	NORMAL LETDOW	/N TO REG	GENERAT	IVE HEAT EX	CHANGE	R ISOLA	TION							
1-CH-LCV-1460B	11448-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	В	EV FS ST VP	C C C OC	CS CS CS 24		6 6 6		
	NORMAL LETDOW	/N TO REG	GENERAT	IVE HEAT EX	CHANGE	R ISOLA	TION	••						
1-CH-MOV-1115B	11448-CBM-088B	2 OF 3	B-8	MO GATE	8	2	A	EV LT ST VP	с оссо оС	03 03 24 03 03 24	1			
	CHARGING PUMP STORAGE TANK	SUPPLY	ISOLATIO	N VALVE FRC	M REFU	ELING W	IATER	۷۳	00	24				
1-CH-MOV-1115C	11448-CBM-088B	1 OF 3	C-6	MO GATE	4	2	В	EV ST VP	C C OC	CS CS 24		4 4		
	CHARGING PUMP	SUPPLY	ISOLATIO	N FROM VOL	UME CO	NTROL T	ANK							
1-CH-MOV-1115D	11448-CBM-088B	2 OF 3	C-8	MO GATE	8	2	A	EV LT ST VP	0 0 0 0 0 0 0 0 0	03 03 24 03 03 24	1			

				v	ALVEI	NSERV	ICE TEST I	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CHARGING PUMP STORAGE TANK	SUPPLY	ISOLATIC	N VALVE FRO	OM REFU	IELING W	/ATER							
1-CH-MOV-1115E	11448-CBM-088B	1 OF 3	C-6	MO GATE	4	2	В	EV ST VP	C C OC	CS CS 24		4 4		
	CHARGING PUMP	SUPPLY	ISOLATIC	N VALVE FRO	OM VOLU	IME CON	TROL							
1-CH-MOV-1267A	11448-CBM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FF	6 ROM RWS	_	E AND LHSI	VP	OC	24				
1-CH-MOV-1267B	11448-CBM-088B LOW HEAD SI PUI			MO GATE PUMP SUCTIO		_	_	VP	OC	24				
1-CH-MOV-1269A	11448-CBM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FR	6 ROM RWS	2 ST, VCT A	E AND LHSI	VP	OC	24				
1-CH-MOV-1269B	11448-CBM-088B LOW HEAD SI PUI			MO GATE PUMP SUCTIO	6 DN ISOLA	2 ATION VA	E LVE	VP	OC	24				
1-CH-MOV-1270A	11448-CBM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FR	6 ROM RWS	_	E AND LHSI	VP	OC	24				
1-CH-MOV-1270B	.11448-CBM-088B LOW HEAD SI PUI			MO GATE PUMP SUCTIO	6 DN ISOLA	2 ATION VA	E ILVE	VP	OC	24			· .	····, -
1-CH-MOV-1275A	11448-CBM-088B	2 OF 3	D-7	MO GATE	2	2	В	EV	С	03				
								ST	0 C 0	03 03 03				
	"A" CHARGING PL		/UM REC	IRCULATION	ISOLATIO		E	VP	õ	24				
1-CH-MOV-1275B	11448-CBM-088B	2 OF 3	D-5	MO GATE	2	2	В	EV	C O	03 03				

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				V		NSERV	ICE I	ESTIA	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL ⁻ TEST VNC-
1-CH-MOV-1275B	11448-CBM-088B	2 OF 3	D-5	MO GATE	2	2	В		ST	C O	03 03				
	"B" CHARGING PU	MP MININ	IUM RECI	RCULATION I	SOLATIC	ON VALVE	E		VP	õc	24				
1-CH-MOV-1275C	11448-CBM-088B	2 OF 3	D-3	MO GATE	2	2	В		EV	C O	03 03				
									ST	c o	03 03				
	"C" CHARGING PU		IUM RECI	RCULATION I	SOLATIC	ON VALVI	Ξ		VP	OC	24				
1-CH-MOV-1286A	11448-CBM-088B	2 OF 3	E-7	MO GATE	3	2	В		EV	C O	03 03				
									ST	c o	03 03				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	ALVE				VP	OC	24				
1-CH-MOV-1286B	11448-CBM-088B	2 OF 3	E-6	MO GATE	3	2	В		EV	C O	03 03				
									ST	č o	03 03				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	ALVE				VP	oc	24				
1-CH-MOV-1286C	11448-CBM-088B	2 OF 3	E-4	MO GATE	3	2	В		EV	C O	03 03				
									ST	č o	03 03				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	ALVE				VP	OC	24				
1-CH-MOV-1287A	11448-CBM-088B	2 OF 3	D-7	MO GATE	3	2	В		EV	C O	03 03				
									ST	c o	03 03				

				V	ALVE I	NSERV	ICE TE	ST TA	BLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VA CAT TY		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-CH-MOV-1287A	11448-CBM-088B CHARGING PUMP			MO GATE ISOLATION V	3 /ALVE	2	В		VP	ос	24				
1-CH-MOV-1287B	11448-CBM-088B	2 OF 3	D-6	MO GATE	3	2	В		EV ST	с о с о	03 03 03 03 03				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	/ALVE				VP	oc	24				
1-CH-MOV-1287C	11448-CBM-088B	2 OF 3	D-4	MO GATE	3	2	В		EV ST VP	C O C O OC	03 03 03 03 24				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	/ALVE				vi	00	27				
1-CH-MOV-1289A	11448-CBM-088C	1 OF 2	B-4	MO GATE	3	2	В		EV ST VP	C C OC	CS CS 24		7 7		
	MAIN CHARGING	HEADER I	SOLATIO	N VALVE											
1-CH-MOV-1289B	11448-CBM-088C	1 OF 2	B-3	MO GATE	3	2	В		EV ST VP	C C OC	CS CS 24		7 7		
	MAIN CHARGING	HEADER I	SOLATIO	N VALVE, OU	TSIDE CO	ONTAINM	IENT		••						
1-CH-MOV-1350	11448-CBM-088B	1 OF 3	B-5	MO GATE	2	2	В		EV ST VP	0 0 00	03 03 24		10 10		
	EMERGENCY BOP	RATION TO) CHARGI	NG PUMP SU	ICTION				•.	00					
1-CH-MOV-1373	11448-CBM-088B	2 OF 3	E-7	MO GATE	3	2	В		EV ST VP	C C OC	RR RR 24			4 4	
	CHARGING PUMP	RECIRCU	ILATION H	IEADER ISOL	ATION V	ALVE			VF	00	27				
1-CH-MOV-1381	11448-CBM-088B	1 OF 3	C-8	MO GATE	3	2	A CI	IV	EV LT	C C	CS OPB		5		

DRAWING							ISO				REL	CS	RR	NC ALT
NUMBER	SHEET	COOR	VALVE TYPE			CAT	VALVE TYPE	TEST TYPE	POS		REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
REACTOR COOLA			MO GATE	3 I, OUTSII	2	Α	CIV	ST VP	C OC	CS 24		5		
LETDOWN RELIEF	VLV DOV	VNSTRE				-	0	SP	0	120				
REACTOR COOLA	NT PUMP	SEAL W			_	-	E	SP	0	120				
SEAL WATER HEA	T EXCHA							SP	0	120				
				2 DNTAINN	2 IENT ISC		-	EV FS LT ST VP	с сс сс ос	CS CS OPB CS 24		6 6 6		
				2	2 NMENT	A	CIV	EV FS LT ST VP	С С С С С С С	CS CS OPB CS 24		6 6 6		
-	11448-CBM-088B REACTOR COOLA ISOLATION VALVE 11448-CBM-088C LETDOWN RELIEF PRESSURIZER RE 11448-CBM-088C REACTOR COOLA TO PRESSURIZER 11448-CBM-088B SEAL WATER HEA VOLUME CONTRO 11448-CBM-088C LETDOWN CONTR VALVE	11448-CBM-088B 1 OF 3 REACTOR COOLANT PUMP ISOLATION VALVE 11448-CBM-088C 1 OF 2 LETDOWN RELIEF VLV DOW PRESSURIZER RELIEF TAN 11448-CBM-088C 2 OF 2 REACTOR COOLANT PUMP TO PRESSURIZER RELIEF 11448-CBM-088B 1 OF 3 SEAL WATER HEAT EXCHA VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 LETDOWN CONTROL FROM VALVE	11448-CBM-088B 1 OF 3 C-8 REACTOR COOLANT PUMP SEAL W ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 LETDOWN RELIEF VLV DOWNSTRE PRESSURIZER RELIEF TANK 11448-CBM-088C 2 OF 2 F-5 REACTOR COOLANT PUMP SEAL W TO PRESSURIZER RELIEF TANK 11448-CBM-088B 1 OF 3 C-7 SEAL WATER HEAT EXCHANGER REVOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 LETDOWN CONTROL FROM REGEN VALVE	11448-CBM-088B 1 OF 3 C-8 MO GATE REACTOR COOLANT PUMP SEAL WATER RETURN ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, F 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, F VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE LETDOWN CONTROL FROM REGEN HX, INSIDE CO VALVE AO GATE I 11448-CBM-088A 2 OF 2 D-3 AO GATE LETDOWN CONTROL FROM REGEN HX, OUTSIDE I I	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIL ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 LETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV I PRESSURIZER RELIEF TANK 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE 2 REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, F TO PRESSURIZER RELIEF TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE 2 SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCH VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINN VALVE 11448-CBM-088A 2 OF 2 D-3 AO GATE 2 LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINN VALVE 11448-CBM-088A 2 OF 2 D-3 AO GATE 2	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE 2 2 2 REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARD 10 7 7 7 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE 2 2 2 SEAL WATER HEAT EXCHANGER RELIEF VALVE, RV DISCHARGE T VOLUME CONTROL TANK 1 1 1 1 1 1 1 1 1 1 1 2 2 LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISC VALVE 1 2 2 11448-CBM-088A 2 OF 2 D-3 AO GATE 2 2 LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT <td< td=""><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINM ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE 2 2 C REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARGE TO PRESSURIZER RELIEF TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONAL TANK I I I I I I I I I</td><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE 2 A CIV LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT 2 A CIV LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT 2</td><td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVST VPREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE10F 2F-4RELIEF VALVE 22CSP11448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSPLETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANKSPSP11448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPSP11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANKSPSP11448-CBM-088C1 OF 2D-3AO GATE22ACIV11448-CBM-088C1 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVEI1448-CBM-088A2 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVEI1448-CBM-088A2 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTISOLATION VPISOLATIONISOLATIONISOLATIONLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTISOLATIONISOLATIONISOLATIONISOLATION</td><td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE10F 2F-4RELIEF VALVE22CSPO11448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPOPRESSURIZER RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANKSPOO11448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO11448-CBM-088B1 OF 3C-7RELIEF VALVE22CSPOSEAL WATER RELIEF TANK11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPO11448-CBM-088B1 OF 2D-3AO GATE22ACIVEVCFSCCTCFSCLTCSTCLTC11448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCFSCLTCSTCCTCSTCCTCSTCLTCSTCLTCSTCCTCCSTCCTCSTCCSTCCSTCCSTCCSTCCSTCCSTCCSTCCSTC<td< td=""><td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVST VPCC2411448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO120VOLUME CONTROL TANK11448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424CCSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSTCCSST<td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCCSREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENTISOLATION VALVEOC2411448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSP012011448-CBM-088C1 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC242424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSCSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTC<td< td=""><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 0C 24 5 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP 0 120 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP 0 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV EV C CS 6 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV</td><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE SP O 120 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE SP O 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV EV C CS 6 11448-CBM-088A 1 OF 2 D-3 AO GATE<</td></td<></td></td></td<></td></td<>	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINM ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE 2 2 C REACTOR COOLANT PUMP SEAL WATER RELIEF VALVE, RV DISCHARGE TO PRESSURIZER RELIEF TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONAL TANK I I I I I I I I I	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANK 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV LETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVE 2 A CIV LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT 2 A CIV LETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENT 2	11448-CBM-088B1 OF 3C-8MO GATE32ACIVST VPREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE10F 2F-4RELIEF VALVE 22CSP11448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSPLETDOWN RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANKSPSP11448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPSP11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TO VOLUME CONTROL TANKSPSP11448-CBM-088C1 OF 2D-3AO GATE22ACIV11448-CBM-088C1 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVEI1448-CBM-088A2 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATION VALVEI1448-CBM-088A2 OF 2D-3AO GATE22ACIVFSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTISOLATION VPISOLATIONISOLATIONISOLATIONLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTISOLATIONISOLATIONISOLATIONISOLATION	11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE10F 2F-4RELIEF VALVE22CSPO11448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPOPRESSURIZER RELIEF VLV DOWNSTREAM OF REGEN HX, RV DISCHARGE TO PRESSURIZER RELIEF TANKSPOO11448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO11448-CBM-088B1 OF 3C-7RELIEF VALVE22CSPOSEAL WATER RELIEF TANK11448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPO11448-CBM-088B1 OF 2D-3AO GATE22ACIVEVCFSCCTCFSCLTCSTCLTC11448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCFSCLTCSTCCTCSTCCTCSTCLTCSTCLTCSTCCTCCSTCCTCSTCCSTCCSTCCSTCCSTCCSTCCSTCCSTCCSTC <td< td=""><td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVST VPCC2411448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO120VOLUME CONTROL TANK11448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424CCSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSTCCSST<td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCCSREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENTISOLATION VALVEOC2411448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSP012011448-CBM-088C1 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC242424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSCSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTC<td< td=""><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 0C 24 5 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP 0 120 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP 0 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV EV C CS 6 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV</td><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE SP O 120 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE SP O 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV EV C CS 6 11448-CBM-088A 1 OF 2 D-3 AO GATE<</td></td<></td></td></td<>	11448-CBM-088B1 OF 3C-8MO GATE32ACIVST VPCC2411448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-4RELIEF VALVE22CSPO12011448-CBM-088C1 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088C2 OF 2F-5RELIEF VALVE22CSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGESPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO12011448-CBM-088B1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSPO120VOLUME CONTROL TANK11448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424CCSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSFCCSSTCCSST <td>11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCCSREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENTISOLATION VALVEOC2411448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSP012011448-CBM-088C1 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC242424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSCSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTC<td< td=""><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 0C 24 5 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP 0 120 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP 0 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV EV C CS 6 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV</td><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE SP O 120 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE SP O 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV EV C CS 6 11448-CBM-088A 1 OF 2 D-3 AO GATE<</td></td<></td>	11448-CBM-088B1 OF 3C-8MO GATE32ACIVSTCCSREACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENTISOLATION VALVEOC2411448-CBM-088C1 OF 2F-4RELIEF VALVE 22CSP012011448-CBM-088C1 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088C2 OF 2F-5RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088B1 OF 3C-7RELIEF VALVE 22CSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 3C-7RELIEF VALVE, RV DISCHARGE TOSP012011448-CBM-088C1 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC2424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSLETDOWN CONTROL FROM REGEN HX, INSIDE CONTAINMENT ISOLATIONVPOC242424242411448-CBM-088A2 OF 2D-3AO GATE22ACIVEVCCSCSLETDOWN CONTROL FROM REGEN HX, OUTSIDE CONTAINMENTC <td< td=""><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 0C 24 5 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP 0 120 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP 0 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV EV C CS 6 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV</td><td>11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE SP O 120 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE SP O 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV EV C CS 6 11448-CBM-088A 1 OF 2 D-3 AO GATE<</td></td<>	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE 0C 24 5 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP 0 120 11448-CBM-088C 1 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP 0 120 PRESSURIZER RELIEF TANK 2 2 C SP 0 120 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP 0 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 2 A CIV EV C CS 6 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV	11448-CBM-088B 1 OF 3 C-8 MO GATE 3 2 A CIV ST C CS 5 REACTOR COOLANT PUMP SEAL WATER RETURN, OUTSIDE CONTAINMENT ISOLATION VALVE SP O 120 11448-CBM-088C 1 OF 2 F-4 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 2 OF 2 F-5 RELIEF VALVE 2 2 C SP O 120 11448-CBM-088C 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE SP O 120 11448-CBM-088B 1 OF 3 C-7 RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 SEAL WATER RELIEF VALVE, RV DISCHARGE TO SP O 120 11448-CBM-088C 1 OF 2 D-3 AO GATE 2 A CIV EV C CS 6 11448-CBM-088A 1 OF 2 D-3 AO GATE<

				V P		NJERV	ICE	IESI I/	ADLL						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR			ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CS-013	11448-CBM-084A	2 OF 3	F-4	CHECK VALVE	8	2	AC	CIV	CV	C O	CM CM				
	"A" CONT SPRAY CHECK VALVE	PUMP INS	IDE CO	NTAINMENT ISO	LATION	I DISCHA	RGE		LT	С	OPB				
1-CS-024	11448-CBM-084A	2 OF 3	E-4	CHECK VALVE	8	2	AC	CIV	CV	C O	CM CM				
	"B" CONT SPRAY CHECK VALVE	PUMP INS	IDE CO	NTAINMENT ISO	LATION	I DISCHA	RGE		LT	c	OPB				
1-CS-045	11448-CBM-084A	1 OF 3	F-8	CHECK VALVE	2	2	С		CV	C O	CM				
	RWST COOLING S	SYSTEM R	ETURN	ISOLATION CHE	ECK VAL	VE				0	СМ				
1-CS-105	11448-CBM-084A	2 OF 3	F-3	CHECK VALVE	8	2	С		CV	C O	CM CM				
	CONTAINMENT SP	PRAY PUN	IP DISC	HARGE CHECK	VALVE					0	CIVI				
1-CS-127	11448-CBM-084A	2 OF 3	E-3	CHECK VALVE	8	2	С		CV	C O	CM CM				
	CONTAINMENT SP	PRAY PUN	IP DISC	HARGE CHECK	VALVE					Ū	CIVI				
1-CS-147	11448-CBM-084A	2 OF 3	C-4	CHECK VALVE	3	2	AC		CV	C O	CM CM				
	CONTAINMENT SP	PRAY BLE	ED LINE	E CHECK VALVE					LT	č	24				
1-CS-150	11448-CBM-084A	2 OF 3	C-4	CHECK VALVE	3	2	AC		CV	C O	CM CM				
	CONTAINMENT SP	PRAY BLE		E CHECK VALVE					LT	c	24				
1-CS-MOV-100A	11448-CBM-084A	2 OF 3	B-7	MO GATE	12	2	В		EV ST	0	03 03				
	CONTAINMENT SF		IP SUCT	TION ISOLATION	I VALVE				VP	õc	24				

				V	ALVE II	NSERV	ICE	TEST T/	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-CS-MOV-100B	11448-CBM-084A	2 OF 3	A-7	MO GATE	12	2	В		EV ST VP	0 0 00	03 03 24			
	CONTAINMENT SP	PRAY PUN	IP SUCT	ION ISOLATIO	N VALVE									
1-CS-MOV-101A	11448-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV LT ST VP	С ОСС ОС	03 03 OPB 03 03 24			
	"A" CONT SPRAY I CONTAINMENT IS			E ISOLATION V	ALVE, O	UTSIDE			VF	00	24			
1-CS-MOV-101B	11448-CBM-084A "A" CONT SPRAY I CONTAINMENT IS	PUMP DIS	CHARGE	MO GATE	8 ALVE, O	2 UTSIDE	A	CIV	EV LT ST VP	с о с с о с о с	03 03 OPB 03 03 24			
1-CS-MOV-101C	11448-CBM-084A "B" CONT SPRAY I CONTAINMENT IS	PUMP DIS	CHARGE	MO GATE	8 'ALVE, O	2 UTSIDE	A	CIV	EV LT ST VP	с оссо оС	03 03 OPB 03 03 24			
1-CS-MOV-101D	11448-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV LT ST VP	C O C C O O C	03 03 0PB 03 03 24			
	"B" CONT SPRAY			E ISOLATION V	ALVE, O	UTSIDE								

				v		VOLINA	ICE LEST I	ADEC						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL ⁻ TEST VNC-
1-CS-MOV-102A	11448-CBM-084A	3 OF 3	C-6	MO BFLY	6	2	В	EV ST VP	0 0 00	03 03 24				
	CHEMICAL ADDITI	ON TANK	DISCHA	RGE TO RWST	T ISOLAT	ION VAL	VE							
1-CS-MOV-102B	11448-CBM-084A	3 OF 3	B-6	MO BFLY	6	2	В	EV ST VP	0 0 00	03 03 24				
	CHEMICAL ADDIT	ON TANK	DISCHA	RGE TO RWST	ISOLAT	ION VAL	VE	•.	00					

				v	ALVEI	NSERV	ICE	16311	ADLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-CV-002	11448-CBM-085A CONTAINMENT V/ ISOLATION VALVE	ACUUM E.		MAN GATE SUPPLY, OUT	8 SIDE CO	2 NTAINME		CIV	LT	С	OPB			
1-CV-HCV-100	11448-CBM-085A	1 OF 2	D-3	AO GATE	8	2	AE	CIV	LT VP	ن 00	ОРВ 24			
	CONTAINMENT V	ACUUM E	JECTOR,	INSIDE CONT	AIN- MEN	NT ISOLA	TION							
1-CV-TV-150A	11448-CBM-085A	2 OF 2	E-4	AO GATE	2	2 ·	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	"A" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIC	θE	•		-			
1-CV-TV-150B	11448-CBM-085A	2 OF 2	E-5	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24			
	"A" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIC	θE	VF	00	24			
1-CV-TV-150C	11448-CBM-085A	2 OF 2	D-4	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	"B" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSI	θE	••		L 7			
1-CV-TV-150D	11448-CBM-085A	2 OF 2	D-5	AO GATE	2	2	A	CIV	EV FS LT ST VP	С С С С ОС	03 03 OPB 03 24			

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SURRY UNIT 1 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE	VALVE SIZE	CLASS	CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" CONTAINME	NT VACUUM PUMP S											

				v	ALVE I	NSERV	ICE TEST 1	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	 NC ALT TEST VNC-
1-CW-MOV-100A	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96	NC	В	EV EV ST VP	C P C OC	03 03 03 24		19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIO	N VALVE				•••					
1-CW-MOV-100B	11448-CBM-071A	2 OF 4	F-7	MO BFLY	96	NC	В	EV EV ST	C P C	03 03 03		19 19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIC	N VALVE				VP	OC	24			
1-CW-MOV-100C	11448-CBM-071A	2 OF 4	F-6	MO BFLY	96	NC	В	EV EV ST VP	C P C OC	03 03 03 24		19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIC	N VALVE				vi	00	24			
1-CW-MOV-100D	11448-CBM-071A	2 OF 4	F-5	MO BFLY	96	NC	В	EV EV ST VP	C P C OC	03 03 03 24		19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIC	N VALVE				VP	00	24			
1-CW-MOV-106A	11448-CBM-071A	2 OF 4	D-7	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	et isolat		VE									
1-CW-MOV-106B	11448-CBM-071A	2 OF 4	Ď-7	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	ET ISOLAT	FION VAL	VE				••	00	2.			
1-CW-MOV-106C	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	ET ISOLAT	TION VAL	VE				••					
1-CW-MOV-106D	11448-CBM-071A	2 OF 4	D-5	MO BFLY	96	3	В	EV ST	C C	03 03		19 19	

				Υ.		AOFICA		ADLL							
							ISO				REL	CS	RR	NC ALT	
VALVE	DRAWING			VALVE	VALVE	ASME	ISTC VALVE	TEST	TEST	TEST	REQ	JUST	JUST	TEST	
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-	
1-CW-MOV-106D	11448-CBM-071A CONDENSER INLE	2 OF 4 T ISOLA		MO BFLY	96	3	В	VP	OC	24					

				v.	ALVE II	N SEKV		IESI II	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS		REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
1-DA-TV-100A	11448-CBM-083B	3 OF 3	B-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	REACTOR CONTA			MPS DISCHAF	rge, ins	IDE			••						
1-DA-TV-100B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	REACTOR CONTA CONTAINMENT IS			MPS DISCHAF	RGE, OUT	ISIDE			vi	00	24				
1-DA-TV-103A	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				
	POST ACCIDENT S		SYSTEM F	RETURN, OUT	SIDE CO	NTAINM	ENT		vi	00	24				
1-DA-TV-103B	11448-CBM-083A	2 OF 3	E-7	AO GATE	2	2	A	CIV	EV FS LT ST	с с с с с	03 03 OPB 03				
	POST ACCIDENT S VALVE	SAMPLES	SYSTEM F	RETURN, OUT	SIDE CO	NTAINMI	ENT T	RIP	VP	OC	24				

VALVE	DRAWING			VALVE	VALVE	ASME	ISTC	ISO VALVE	TEST	TEST	TEST	REL REQ	CS JUST	RR JUST	NC A		
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT	TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-		
1-DG-TV-108A	11448-CBM-083B	1 OF 3	B-2	AO GATE	2	2	A	CIV	EV	С	03						
									FS	С	03						
									LT	С	OPB						
									ST	С	03						
									VP	OC	24						
	PRIMARY DRAIN T	RANSFE	R PUMPS	DISCHARGE,	INSIDE (CONTAIN	IMENT	ŗ.									
	PRIMARY DRAIN T ISOLATION VALVE		R PUMPS	DISCHARGE,	INSIDE (CONTAIN	IMEN1	Г 									
				DISCHARGE,	INSIDE (2	2 CONTAIN	IMEN1	CIV	EV	с	03						
1-DG-TV-108B	ISOLATION VALVE								FS	C C	03 03						
1-DG-TV-108B	ISOLATION VALVE									-							
1-DG-TV-108B	ISOLATION VALVE								FS	č	03						
1-DG-TV-108B	ISOLATION VALVE								FS LT	C C	03 OPB						

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				v <i>r</i>		NOLIVA		ADLL					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	RR JUST RRV-	NC ALT TEST VNC-
1-EE-015	11448-FB -038A	2 OF 3	B-7	CHECK VALVE	1.5	NC	С	CV	C O	CM CM		 	
	DIESEL EMERGE	NCY GENE	RATOR	FUEL OIL PUM	P DISCH	IARGE C	HECK		0	CIVI			
1-EE-019	11448-FB -038A	2 OF 3	F-7	CHECK VALVE	1.5	NC	С	CV	C O	CM CM		 	
	DIESEL EMERGE	NCY GENE	RATOR	FUEL OIL PUM	P DISCH	IARGE C	HECK		0	CIVI			
1-EE-028	11448-FB -038A	2 OF 3	E-6	CHECK VALVE	1.5	NC	С	CV	c	CM		 	
	DIESEL EMERGE	NCY GENE	RATOR		P DISCH	IARGE C	HECK		0	СМ			
 1-EE-035	11448-FB -038A	2 OF 3	 В-6	CHECK VALVE	1.5	NC	C	CV	С	СМ		 	
	DIESEL EMERGE	NCY GENE	RATOR	FUEL OIL PUM	P DISCH	IARGE C	HECK		0	СМ			
1-EE-RV-103	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION							SP	0	120		 	4
1-EE-RV-105	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION						C E TO	SP	0	120		 	4
1-EE-RV-106	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION						-	SP	0	120		 	4
1-EE-RV-108	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION			RELIEF VALVE BE RELIEF VALV		NC SCHARG	-	SP	0	120		 	4
1-EE-SOV-100	11448-FB -038A	2 OF 3	C-4	SO GATE	1	NC	В	EV	0	03		 	·····
	DIESEL FUEL OIL	PUMP DIS	SCHARG	SE VALVE				ST	0	NA			2
1-EE-SOV-101	11448-FB -038A	2 OF 3	в-4	SO GATE	1	NC	В	EV	0	03		 	
								ST	0	NA			2

			• 4										
DRAWING NUMBER	SHEET	COOR	VALVE TYPE				TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
DIESEL FUEL OIL	PUMP DIS	CHARG	E VALVE										
11448-FB -038A	2 OF 3	F-4	SO GATE	1	NC	В	EV ST	0	03 NA				
DIESEL FUEL OIL	PUMP DIS	CHARG	E VALVE				01	Ū	14/ (·. ·	L
11448-FB -038A	2 OF 3	F-4	SO GATE	1	NC	В	EV	0	03				······
DIESEL FUEL OIL	PUMP DIS	CHARG	E VALVE				51	0	NA				2
	NUMBER DIESEL FUEL OIL 11448-FB -038A DIESEL FUEL OIL 11448-FB -038A	NUMBERSHEETDIESEL FUEL OIL PUMP DIS11448-FB -038A2 OF 3DIESEL FUEL OIL PUMP DIS11448-FB -038A2 OF 3	NUMBERSHEET COORDIESEL FUEL OIL PUMP DISCHARG11448-FB -038A2 OF 3F-4DIESEL FUEL OIL PUMP DISCHARG11448-FB -038A2 OF 3F-4	DRAWING NUMBERVALVE SHEET COORVALVE TYPEDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATEDIESEL FUEL OIL PUMP DISCHARGE VALVE	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1DIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE111448-FB -038A2 OF 3F-4SO GATE1	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEASME SIZEDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1NCDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1NCDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1NC	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEASME CLASSIST CAT TYPEDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1NCBDIESEL FUEL OIL PUMP DISCHARGE VALVE11448-FB -038A2 OF 3F-4SO GATE1NCB11448-FB -038A2 OF 3F-4SO GATE1NCB	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC VALVE TYPETEST TYPEDIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST11448-FB -038A2 OF 3F-4SO GATE1NCBEV STDIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV 	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC CAT TYPETEST TYPETEST POSDIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST0DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST0	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE SIZEASME CLASSISTC VALVE CAT TYPETEST TYPETEST POSFREQDIESEL FUEL OIL PUMP DISCHARGE VALVEINCBEV ST003 O03 O03 NADIESEL FUEL OIL PUMP DISCHARGE VALVEINCBEV ST003 O03 ST003 ONADIESEL FUEL OIL PUMP DISCHARGE VALVEINCBEV ST003 ONA11448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 O11448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 O	DRAWING NUMBERVALVE SHEET COORVALVE VALVE TYPEVALVE ASME SIZEISTC VALVE CAT TYPETEST TYPEREL REQ V-DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 O03 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST003 ST0003 ST003 ST00000000 <t< td=""><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE SIZEASME CLASSISO CAT CAT TYPETEST TYPETEST TEST TEST TYPEREQ REQ V-CS JUST CSV-DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST0NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST0NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST0</td><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC VALVE TYPETEST TYPETEST POSTEST FREQREQ V-JUST CSV-RRV-DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST003 NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST004 NA11448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST0</td></t<>	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE SIZEASME CLASSISO CAT CAT TYPETEST TYPETEST TEST TEST TYPEREQ REQ V-CS JUST CSV-DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST0NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST0NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST0	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC VALVE TYPETEST TYPETEST POSTEST FREQREQ V-JUST CSV-RRV-DIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST003 NADIESEL FUEL OIL PUMP DISCHARGE VALVE1NCBEV ST003 ST004 NA11448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST011448-FB -038A2 OF 3F-4SO GATE1NCBEV ST003 ST0

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				VA	ALVEI	NSERV		ABLE				00		
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-EG-040	11448-FB -046A	1 OF 3	B-6	CHECK VALVE	0.75	NC	AC	cv	C O	CM CM				
								LT	c	24				
	DIESEL GENERA	TOR COM	PRESSC	OR DISCHARGE	CHECK	VALVE								
1-EG-042	11448-FB -046A	1 OF 3	B-5	CHECK VALVE	0.75	NC	AC	CV	С	CM				
								LT	O C	CM 24				
	DIESEL GENERA	TOR COM	PRESSC	OR DISCHARGE	CHECK	VALVE			Ū					
 1-EG-043	11448-FB -046A	1 OF 3	E-7	AIR PILOT	0	NC	В	EV	0	03				
	EMERGENCY DIE				שועם			ST	0	NA				1
	CONTROL VALVE		ERATOR	STARTING AIR	DRIVE	чк								
1-EG-044	11448-FB -046A	1 OF 3	E-3	AIR PILOT	0	NC	В	EV ST	0	03 NA				1
	EMERGENCY DIE CONTROL VALVE		ERATOR	R STARTING AIR/	DRIVE /	AIR		31	0	NA				I
1-EG-045	11448-FB -046A	1 OF 3	E-7	CHECK VALVE	0	NC	С	CV	c	CM				
	EMERGENCY DIE VALVE	SEL GEN	ERATOR	R START PRESS	JRE EQ	UALIZIN	G CHECK		0	СМ				
1-EG-046	11448-FB -046A	1 OF 3	E-4	CHECK VALVE	0	NC	C	CV	C	СМ				
	EMERGENCY DIE VALVE	SEL GENI	ERATOR	START PRESS	JRE EQ	UALIZIN	G CHECK		0	СМ				
 1-EG-SOV-100A	11448-FB -046A	1 OF 3	E-7	SO GATE	1	NC	в	EV	С	03				
								ST	O C	03 NA				1
								31	ŏ	NA				1
	DIESEL AIR STAF	RT SYSTEM	M SOLEN	NOID VALVE										
1-EG-SOV-100B	11448-FB -046A	1 OF 3	E-4	SO GATE	1	NC	В	EV	С	NA				
									0	NA				

				VA	ALVEI	NSERV	ICE IEST IA	ARLE			051	00	
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-EG-SOV-100B	11448-FB -046A	1 OF 3	E-4	SO GATE	1	NC	В	ST	C O	NA			 1
	DIESEL AIR STAR	T SYSTEM	I SOLE	NOID VALVE					0	NA			1
 3-EG-040	11448-FB -046C	i OF 3	B -6	CHECK VALVE	0.75	NC	AC	CV	с С	CM			
								٤T	o C	CM 24			
	DIESEL GENERA	TOR COM	PRESSC	OR DISCHARGE	CHECK	VALVE							
3-EG-042	11448-FB -046C	1 OF 3	B-5	CHECK VALVE	0.75	NC	AC	CV	С	СМ			
								LT	o c	CM 24			
	DIESEL GENERA	TOR COM	PRESSO	OR DISCHARGE	CHECK	VALVE							
 3-EG-043	11448-FB -046C	1 OF 3	E-7	AIR PILOT	0	NC	В	EV	0	03		*******	
	EMERGENCY DIE CONTROL VALVE		ERATOF	R STARTING AIR/	DRIVE /	AIR		ST	0	03			1
3-EG-044	11448-FB -046C	1 OF 3	E-3	AIR PILOT	0	NC	В	EV ST	0	03 03			 1
	EMERGENCY DIE CONTROL VALVE		ERATOF	R STARTING AIR	DRIVE /	AIR		0.	Ū				·
 3-EG-045	11448-FB -046C	1 OF 3	E-7	CHECK VALVE	0	NC	С	CV	c	CM			
	EMERGENCY DIE VALVE	SEL GENI	ERATOF	R START PRESSI	JRE EQ	UALIZIN	G CHECK		0	СМ			
 3-EG-046	11448-FB -046C	1 OF 3	E-4	CHECK VALVE	0	NC	С	CV	C	CM CM			
	EMERGENCY DIE VALVE	SEL GENI	ERATOR	R START PRESS	JRE EQ	UALIŽINO	G CHECK		0	Civi			
3-EG-SOV-300A	11448-FB -046C	1 OF 3	E-7	SO GATE	1	NC	В	EV	C	03			
								ST	O C	03 03			1
									õ	03			1

				v										
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	DIESEL AIR STAR	TSYSTEM	SOLEN	OID VALVE										
3-EG-SOV-300B	11448-FB -046C	1 OF 3	E-4	SO GATE	1	NC	В	EV	C O	03 03				
								ST	Č O	03 03				1, ' 1
	DIESEL AIR STAR								Ŭ	00				I

				V I		JERV									
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FP-151	11448-CBB-047B FIRE PROTECTIOI ISOLATION VALVE		D-5 (TO CON	MAN BALL ITAINMENT, O	4 UTSIDE (2 CONTAIN	AE NMENT	CIV	LT	С	OPB				
1-FP-152	11448-CBB-047B FIRE PROTECTIOI ISOLATION VALVE		D-5 (TO CON	MAN BALL ITAINMENT, O	4 UTSIDE (2 CONTAIN	AE NMENT	CIV	LT	С	OPB				

							ICE LEST 1/							
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-010	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	14	2	С	cv	C O	CM CM				
	"A" MAIN FEEDWA CHECK VALVE	TER SUP	PLY, INS	SIDE CONTAINM	ENT PE	NETRAT	ION		0	CM	<i>,</i> .			
1-FW-012	11448-CBM-068A	1 OF 4	E-5	CHECK VALVE	14	2	C	CV	C O	CM CM				
	"A" MAIN FEEDWA CHECK VALVE	TER SUP	PLY, OU	ITSIDE CONTAIN	IMENT	PENETR	ATION		0	CIVI				
1-FW-027	11448-CBM-068A	1 OF 4	E-6	CHECK VALVE	3	2	С	CV	C O	CM				
	"A" AUXILIARY FEI HEADER	EDWATER	RHEADE	ER CHECK VALV	E AT M	AIN FEE	WATER		0	СМ				
1-FW-030	11448-CBM-068A	1 OF 4	B-6	CHECK VALVE	3	2	С	CV	C O	CM CM				
	AUXILIARY FEEDV	VATER HE	ADER S	SUPPLY ISOLATI	ON CH	ECK VAL	VE		0					
1-FW-031	11448-CBM-068A	1 OF 4	B-5	CHECK VALVE	3	2	С	CV	C O	CM CM				
	AUXILIARY FEEDV	VATER HE	EADER S	SUPPLY ISOLATI	ON CH	ECK VAL	VE		0	CIVI				
1-FW-041	11448-CBM-068A	1 OF 4	B-6	CHECK VALVE	14	2	C	CV	C O	CM CM				
	"B" MAIN FEEDWA PENETRATION CH			PPLY, INSIDE CO	ONTAIN	MENT			0	CIVI				
1-FW-043	11448-CBM-068A	1 OF 4	B-5	CHECK VALVE	14	2	С	CV	C O	CM CM				
	"B" MAIN FEEDWA CHECK VALVE	TER SUP	PLY, OU	ITSIDE CONTAIN	IMENT	PENETR/	ATION		Ū	CIVI				
1-FW-058	11448-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	С	CV	c	CM				
	"B" AUXILIARY FEI HEADER	EDWATEF		ER CHECK VALV	E AT M	AIN FEE	WATER		0	СМ				

				V	ALVEI	NJERV	ICE IES	INADLE					
VALVE NUMBER	DRAWING NUMBER	SHEET C		LVE PE			ISC ISTC VALV CAT TYPE	VE TEST		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-FW-061	11448-CBM-068A	1 OF 4 E	3-7 CHEC	K VALVI	E 3	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV	VATER HEAI	DER SUPPLY	ISOLAT	FION CH	ECK VAL	VE		0	CIM			
1-FW-062	11448-CBM-068A	1 OF 4 B	3-6 CHEC	K VALVI	E 3	2	С	CV	Û O	CM CM			
	AUXILIARY FEEDV	VATER HEAI	DER SUPPLY	ISOLAT		ECK VAL	VE		0	CIM			
1-FW-072	11448-CBM-068A	1 OF 4 C	-6 CHEC	K VALVI	E 14	2	С	CV	C O	CM CM			
	"C" MAIN FEEDWA CHECK VALVE	TER SUPPL	Y, INSIDE CO	NTAINN	/IENT PE	NETRAT	ION		Ū	Civi			
1-FW-074	11448-CBM-068A	1 OF 4 C	-5 CHEC	K VALVI	E 14	2	C	CV	C	CM CM			
	"C" MAIN FEEDWA CHECK VALVE	TER SUPPL	Y, OUTSIDE	CONTAI	NMENT	PENETR	ATION		0	Civi			
1-FW-089	11448-CBM-068A	1 OF 4 C	-6 CHEC	K VALVI	E 3	2	С	CV	C O	CM CM	******		
	"C" AUXILIARY FEI HEADER	EDWATER H	IEADER CHE	CK VALV	VE AT M	AIN FEE	WATER		0	Civi			
1-FW-092	11448-CBM-068A	1 OF 4 B	-6 CHEC	K VALV	E 3	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV	VATER HEAL	DER SUPPLY	ISOLAT	TION CHI	ECK VAL	VE		0	Civi			
1-FW-093	11448-CBM-068A	1 OF 4 B	B-6 CHEC	K VALVI	E 3	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV	VATER HEAL	DER SUPPLY	ISOLAT		ECK VAL	VE		0	CIVI			
1-FW-131	11448-CBM-068A	1 OF 4 B	-4 CHEC	K VALVI	E 6	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV PENETRATION - IN		DER CHECK	VALVE A	AT CONT	AINMEN	т		0	Civi			
1-FW-133	11448-CBM-068A	1 OF 4 B	8-4 CHEC	K VALV	E 6	2	С	CV	C	CM CM			
	AUXILIARY FEEDV PENETRATION - O		DER CHECK	VALVE A	AT CONT	AINMEN	т		0	CIVI			

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-FW-136	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV PENETRATION - IN		ADER (CHECK VALVE A	T CONT	AINMEN	T		0	CIVI			
1-FW-138	11448-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	С	CV	C O	CM CM			
	AUXILIARY FEEDV PENETRATION - O		ADER (CHECK VALVE A	T CONT	AINMEN	Т		U	Civi			
1-FW-140	11448-CBM-068A AFW PUMP DISCH				-	3 NNECT \	B /ALVE	EV	С	24			
1-FW-141	11448-CBM-068A AFW PUMP DISCH				-		-	EV	С	24			
1-FW-142	11448-CBM-068A	3 OF 4	D-8	CHECK VALVE	6	3	С	CV	C O	CM CM			
	TURBINE DRIVEN	AUXILIAR	Y FEED	WATER PUMP D	ISCHAR	RGE CHE	СК		Ū	0 M			
1-FW-144	11448-CBM-068A	3 OF 4	D-7	CHECK VALVE	1	3	С	CV	C O	CM CM			
	TURBINE DRIVEN	AUXILIAR	Y FEED	WATER PUMP R	ECIRC	LINE CH	ECK		0				
1-FW-148	11448-CBM-068A	3 OF 4	E-7	CHECK VALVE	1	3	С	CV	C O	CM CM			
	AUXILIARY FEEDW	VATER TO	PUMP	OIL COOLER CH	IECK V	ALVE			Ū	O.M			
1-FW-155	11448-CBM-068A AFW PUMP DISCH	· ·				3 NNECT \		EV	С	24			
1-FW-156	11448-CBM-068A AFW PUMP DISCH					3 NNECT \	B /ALVE	EV	С	24			
1-FW-157	11448-CBM-068A	3 OF 4	D-6	CHECK VALVE	4	3	С	cv	C O	CM CM			
	"A" MOTOR DRIVE	N AUXILIA	RY FEE	EDWATER PUMP	DISCH	ARGE CI	HECK		U	CIW			

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VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-159	11448-CBM-068A	3 OF 4 D-6	CHECK VALV	E 1	3	С	CV	C O	CM CM				
	"A" MOTOR DRIVE VALVE	N AUXILIARY FE	EDWATER PUM	IP RECIR		HECK		U	CIVI				
1-FW-163	11448-CBM-068A	3 OF 4 E-6	CHECK VALV	E 1	3	С	CV	C	CM CM				
	AUXILIARY FEEDV	VATER TO PUMF	OIL COOLER C	HECK V	ALVE			U	CIVI				
1-FW-170	11448-CBM-068A AFW PUMP DISCH		MANUAL GAT ALIGNMENT/CF		3 NNECT \	B /ALVE	EV	С	24				
1-FW-171	11448-CBM-068A AFW PUMP DISCH				3 NNECT \	B /ALVE	EV	С	24				
1-FW-172	11448-CBM-068A	3 OF 4 D-5	CHECK VALV	E 4	3	С	cv	C	CM				
	"B" MOTOR DRIVE	N AUXILIARY FE	EDWATER PUM	IP DISCH	IARGE C	HECK		0	СМ				
1-FW-174	11448-CBM-068A	3 OF 4 D-5	CHECK VALV	E 1	3	С	CV	C O	CM CM				
	"B" MOTOR DRIVE VALVE	N AUXILIARY FE	EDWATER PUM	P RECIR		HECK		0	Civi				
1-FW-178	11448-CBM-068A	3 OF 4 E-4	CHECK VALV	E 1	3	С	CV	C O	CM CM				
	AUXILIARY FEEDV	VATER TO PUMP	OIL COOLER C	HECK V	ALVE			0	CIVI				
1-FW-272	11448-CBM-068A	1 OF 4 A-8	CHECK VALV	E 6	2	С	CV	C O	CM CM				
	CHECK VALVE AT FROM UNIT 2)	CONT PENE (CF	ROSS-CONNECT	FOR UN	NIT 1 AUX	(FEED		0	CIVI				
1-FW-273	11448-CBM-068A	1 OF 4 A-7	CHECK VALV	E 6	2	С	CV	C O	CM CM				
	CHECK VALVE AT FROM UNIT 2)	CONT PENE (CF	ROSS-CONNECT	FOR UN	NIT 1 AUX	FEED		U					

				VA		NSERV	ICE TEST TA	ABLE			051	~~	00	
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-FW-309	11448-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	С	CV	C O	CM CM				
	CHECK VALVE AT FROM UNIT 2)	CONT PE	NE (CR	OSS-CONNECT	FOR UN	IIT 1 AUX	(FEED		0	CIVI				
1-FW-310	11448-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	С	CV	C O	CM CM				
	CHECK VALVE AT FROM UNIT 2)	CONT PE	NE (CR	OSS-CONNECT I	FOR UN	IIT 1 AUX	FEED		U	CIVI				
1-FW-FCV-1478	11448-CBM-068A	1 OF 4	E-4	AO GATE	14	NC	В	EV FS ST VP	C C C C	CS CS NA		14 14		3
	MAIN FEEDWATER	R REGULA		ALVE				٧P	OC	24				
1-FW-FCV-1488	11448-CBM-068A	1 OF 4	B-4	AO GATE	14	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
	MAIN FEEDWATER	R REGULA	TING V	ALVE				VP	oc	24				
1-FW-FCV-1498	11448-CBM-068A	1 OF 4	D-4	AO GATE	14	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
	MAIN FEEDWATER	R REGULA		ALVE				VP	oc	24				
1-FW-HCV-155A	11448-CBM-068A	1 OF 4	F-4	AO GATE	4	NC	В	EV FS ST VP	C C C OC	CS CS NA 24		14 14		3
	MAIN FEEDWATER	R REGULA		ALVE BYPASS V	ALVE			۷۳	00	24				
1-FW-HCV-155B	11448-CBM-068A	1 OF 4	C-4	AO GATE	4	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
	MAIN FEEDWATE	R REGULA		ALVE BYPASS V	ALVE			VP	OC	24				

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SURRY UNIT 1 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

				V /									
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	SIZE	CLASS	ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC AL TEST VNC-
1-FW-HCV-155C	11448-CBM-068A	1 OF 4	D-4	AO GATE	4	NC	В	EV FS ST VP	C C C OC	CS CS NA 24		14 14	3
	MAIN FEEDWATER	REGUL/	\TING ⊻^	LVE BYPASS V	/ALVË								
1-FW-MOV-151A	11448-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	B	EV	С	03			
								ST	o c	03 03			
								31	ŏ	03			
								VP	oc	24			
	NORMAL AUXILIA	RY FEEDV	VATER S	UPPLY TO "C"	STEAM	GENERA	TOR						
1-FW-MOV-151B	11448-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	В	EV	С	03			
								ST	O C	03 03			
								31	ŏ	03			
								VP	ŏč	24			
	STANDBY AUXILIA	NRY FEED	WATER	SUPPLY TO "C'	'STEAM	GENER	ATOR						
1-FW-MOV-151C	11448-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	B	EV	С	03			 *********
								ST	0	03 03			
								51	C O	03			
									õ	24			
								VP	00	24			
	STANDBY AUXILIA	NRY FEED	WATER	SUPPLY TO "B'	' STEAM	GENER	ATOR	VP	00	24			
1-FW-MOV-151D	STANDBY AUXILIA 11448-CBM-068A			SUPPLY TO "B" MO GLOBE	' STEAM 	I GENERA	ATOR B	VP EV	c				
1-FW-MOV-151D								EV	с о	ს3 03			
1-FW-MOV-151D									C O C	ს3 03 03			
1-FW-MOV-151D								EV	с о	ს3 03			
1-FW-MOV-151D		1 OF 4	B-7 [.]	MO GLOBE	3	2	В	EV	с о с о	03 03 03 03			
	11448-CBM-068A	1 OF 4 RY FEEDV	B-7 · VATER S	MO GLOBE	3	2	В	EV	C O C O C O C	03 03 03 03 24 03			
	11448-CBM-068A NORMAL AUXILIAI	1 OF 4 RY FEEDV	B-7 · VATER S	MO GLOBE	3 STEAM (2 GENERA	B	EV ST VP EV	C O C OC C O C	03 03 03 24 03 24			
	11448-CBM-068A NORMAL AUXILIAI	1 OF 4 RY FEEDV	B-7 · VATER S	MO GLOBE	3 STEAM (2 GENERA	B	EV ST VP		03 03 03 24 03 03 03 03 03			
	11448-CBM-068A NORMAL AUXILIAI	1 OF 4 RY FEEDV	B-7 · VATER S	MO GLOBE	3 STEAM (2 GENERA	B	EV ST VP EV	C O C OC C O C	03 03 03 24 03 24			

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							ISO				REL	CS	RR	NC AI
VALVE	DRAWING			VALVE	VALVE	ASME	ISTC VALVE	TEST	TEST	TEST	REQ	JUST	JUST	TEST
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
1-FW-MOV-151F	11448-CBM-068A	1 OF 4	B-5	MO GLOBE	3	2	В	EV	С	03				
									0	03				
								ST	Ċ	03				
									õ	03				
								γp	õ	24				
	STANDBY AUXILIA	RY FEED	WATER	SUPPLY TO "A'	' STEAM	GENER	TOR							
1-FW-MOV-160A	11548-CBM-068A	3 OF 4	F-7	MO GLOBE	6	3	В	EV	0	03				
								ST	0	03				
								VP	OC	24				
	CROSS - CONNEC		NIT 1 AUX	VILIARY FEEDV	VATER F	ROM UN	IT 2							
1-FW-MOV-160B	11548-CBM-068A	3 OF 4	F-7	MO GLOBE	 6	3	В	EV	0	03				
								ST	0	03				
								VP	ōc	24				
	CROSS - CONNEC		NIT 1 AUX		VATER F	ROM UN	IT 2	••	50					
	SHOES CONTREC													

				V		AOEVA	ICE	IE91 I	MDLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-GW-TV-100	11448-CBM-090C	1 OF 1	C-6	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	SUCTION LINE TO	HYDROG	EN ANAI	YZER - UNIT	1										
1-GW-TV-101	11448-CBM-090C	1 OF 1	C-6	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24				
	SUCTION LINE TO	HYDROG	EN ANAI	YZER - UNIT	1										
1-GW-TV-102	11448-CBM-090C	1 OF 1	A-7	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				
	DISCHARGE LINE	TO HYDR	OGEN AI	NALYZER - UN	IT 1				VF	00	24				
1-GW-TV-103	11448-CBM-090C	1 OF 1	A-7	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	DISCHARGE LINE	TO HYDR	OGEN A	NALYZER - UN	IT 1				VP	00	24				
1-GW-TV-104	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	SUPPLY TO UNIT		GEN ANA	LYZER, OUTS	IDE CON	TAINME	NT		VI	00	47				
 1-GW-TV-105	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	5 2	A	CIV	EV	с	03				

				v.	ALVE II	N SEKV	ICE	IESI I.	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-GW-TV-105	11448-CBM-090C	1 OF 1	E-6	SO GATE	0.375	5 2	A	CIV	FS LT ST VP	C C C OC	03 OPB 03 24			
	SUPPLY TO UNIT		GEN ANA	ALYZER, OUTS	IDE CON	TAINME	NT							
1-GW-TV-106	11448-CBM-090C	1 OF 1	D-7	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24			
	RETURN FROM UI		ROGEN	ANALYZER, O	UTSIDE C	CONTAIN	MEN	Г						
1-GW-TV-107	11448-CBM-090C	1 OF 1	D-7	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24			
	RETURN FROM UI		ROGEN	ANALYZER, O	UTSIDE C	CONTAIN	IMEN	Γ	••	00				
1-GW-TV-111A	11448-CBM-090C	1 OF 1	F-8	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	UNIT 1 SAMPLE LI ISOLATION VALVE		r sampl	E PANEL, INSI	DE CON	ſAINME!¹	IT							
1-GW-TV-111B	11448-CBM-090C	1 OF 1	F-7	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C O C	03 03 OPB 03 24			

VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE	VALVE SIZE	ASME CLASS	ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
		LINE TO AIR SAMPL	-	JTSIDE CO									

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				V A		NSERV	ICE	IE91 I	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR			ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-IA-446	11448-CBM-075C BACKUP INSTRUI			MAN GATE	2	2	AE	CIV	LT	C	OPB				
1-IA-704	11548-CBM-075B BACKUP INSTRUI			MAN GATE NTAINMENT	2	2	AE	CIV	LT	C	OPB				
1-IA-928	11448-FM -075E	2 OF 2	B-7	CHECK VALVE	0.75	NC	AC		CV	C O C	CM CM 24				
	BOTTLED AIR SU	PPLY TO 1	-RC-PC	V-1456 ISOLATIO	ON CHE	CK VALV	/E			Ŭ	24				
1-IA-938	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2	2	AC	CIV	CV LT	C O C	CM CM OPB				
	INSTRUMENT AIR		TO CON	ITAINMENT, INSI	DE CO	NTAINME	NT		L1	C	OFB				
1-IA-939	11448-CBM-075C	1 OF 5	F-7	CHECK VALVE	2	2	AC	CIV	CV	C O	CM CM				
	INSTRUMENT AIR		TO CON	ITAINMENT, INSI	IDE COI	NTAINME	NT		LT	С	OPB				
1-IA-947	11448-FM -075C	3 OF 5	D-4	CHECK VALVE	0.5	NC	AC		CV	C O	CM CM				
	BOTTLED AIR SU	PPLY TO 1	-MS-PC	V-102A,B ISOLA	TION CI	HECK VA	LVE		LT	С	24				
1-IA-948	11448-FM -075C	3 OF 5	D-4	CHECK VALVE	0.5	NC	С		CV	с о	CM CM				
	BOTTLED AIR SU	PPLY TO 1	-MS-PC	V-102A,B SUPPL	Y CHE	CK VALV	E								
1-IA-949	11448-FM -075E	2 OF 2		CHECK VALVE			С		CV	C O	CM CM				
	BOTTLED AIR SU	PPLY TO 1	-RC-PC	V-1456 SUPPLY	CHECK	VALVE									
1-IA-952	11448-FM -075E	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		CV	С	СМ				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-	
1-IA-952	11448-FM -075E	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		CV LT	0 C	CM 24					
	BOTTLED AIR SUP	PPLY TO	1-RC-PC	V-1455C ISOLAT	ION CH	ECK VAL	LVE									
1-IA-953	11448-F№ -075E	2 OF 2		CHECK VALVE		NC	С		CV	C O	CM CM					,
	BOTTLED AIR SUP	PPLY TO	1-RC-PC	V-1455C SUPPL	Y CHEC	K VALVE	Ξ									
1-IA-RV-114	11448-FM -075E BOTTLED AIR SUF	2 OF 2 PLY TO I		RELIEF VALVE RELIEF VALVE	0	NC	С		SP	0	120					
1-IA-RV-115	11448-FM -075E BOTTLED AIR SUF	2 OF 2 PPLY TO I		RELIEF VALVE RELIEF VALVE	0	NC	С		SP	0	120					
1 -IA-RV -126	11448-FM -075E BOTTLED AIR SUF	2 OF 2 PPLY TO I		RELIEF VALVE RELIEF VALVE	0.75	NC	С		SP	0	120					
1-IA-RV-127	11448-FM -075E BOTTLED AIR SUF	2 OF 2 PPLY TO I	-	RELIEF VALVE RELIEF VALVE	0.75	NC	С		SP	0	120					•
1-IA-TV-100	11448-CBM-075C	1 OF 5	E-8	AO GATE	2	2	A	CIV	EV FS LT ST	с с с с	03 03 OPB 03					
	INSTRUMENT AIR		TO CON	ITAINMENT, OUI	SIDE C	ONTAINI	MENT		VP	OC	24					
1-IA-TV-101A	11448-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24					
	INSTRUMENT AIR	SUCTION	I FROM	CONTAINMENT					vi	00	6 7					
1-IA-TV-101B	 11448-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV FS	C C	03 03					

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

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				V	ALVE II	NSERV	ICE	IESI I.	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-LM-TV-100A	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24			
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	PPLY, O	UTSI	DE						
1-LM-TV-100B	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24			
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	PPLY, O	UTSI	DE		•••				
1-LM-TV-100C	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24			
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	PPLY, O	UTSI	DE	VP	00	24			
1-LM-TV-100D	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	С С С С С С С	03 03 OPB 03 24			
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	PPLY, O	UTSI	DE						
1-LM-TV-100E	11448-CBM-085A	1 OF 2	B-4	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	С С С С ОС	03 03 OPB 03 24			

				v	ALVE I	VSERV	ICE	TEST TA	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTAINMENT LE CONTAINMENT IS			NG OPEN SY	STEM SU	PPLY, O	UTSI	DE							
1-LM-TV-100F	11448-CBM-085A	1 OF 2	B-5	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C C C	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			NG OPEN SY	STEM SU	PPLY, O	UTSI	DE							
1-LM-TV-100G	11448-CBM-085A	1 OF 2	B-6	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			NG OPEN SY	STEM SU	PPLY, O	UTSI	DE	••	00	24				
1-LM-TV-100H	11448-CBM-085A	1 OF 2	B-7	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			NG OPEN SY	STEM SU	PPLY, O	UTSII	DE	VI	00	24				

				VA	LVEI	NSERV	ICE	IEST I/	ARLE	-				
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR			ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-MS-087	11448-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE					B JMP		EV	С	24			
1-MS-120	11448-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE				2 VATER P	B UMP		EV	С	24			
1-MS-158	11448-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE				2 VATER P	B UMP		EV	С	24			
1-MS-176	11448-CBM-064A	4 OF 6	C-7	CHECK VALVE	3	2	С		CV	C O	CM CM			
	"A" MAIN STEAM H AUXILIARY FEEDV			CHECK VALVE T	O TUR	BINE DRI	VEN			0	CIVI			
1-MS-178	11448-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	С		CV	C O	CM CM			
	"B" MAIN STEAM H AUXILIARY FEEDV			CHECK VALVE T	O TUR	BINE DRI	VEN			U	Civi			
1-MS-182	11448-CBM-064A	4 OF 6	D-7	CHECK VALVE	3	2	С		CV	C O	CM CM			
	"C" MAIN STEAM H AUXILIARY FEED			CHECK VALVE T	O TUR	BINE DRI	VEN			0	CIVI			
1-MS-NRV-101A	11448-CBM-064A	1 OF 6	E-4	MO STOP CHECK	< 30	NC	С		CV	C O	CM CM			
	"A" MAIN STEAM H		ION-RE	TURN VALVE					VP	OC	24			
1-MS-NRV-101B	11448-CBM-064A	2 OF 6	D-3	MO STOP CHECK	< 30	NC	С	- -	CV	с	СМ		_	
	"B" MAIN STEAM I		ION-RE	ETURN VALVE					VP	0 OC	CM 24			
					·····									
1-MS-NRV-101C	11448-CBM-064A	3 OF 6	D-3	MO STOP CHECK	C 30	NC	С		CV	С	СМ			

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				V	ALVE	NSERV	ICE	TEST TA	ABLE			DCI	~~		NO 11-
VALVE NUMBER	DRAWING NUMBER	SHEET	COOF	VALVE R TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-MS-NRV-101C	11448-CBM-064A	3 OF 6	D-3	MO STOP CHE	СК 30	NC	С		CV VP	0 00	CM 24				
	"C" MAIN STEAM H	IEADER N	NON-RE	ETURN VALVE					VF	00	24				
1-MS-PCV-102A	11446-CBM-064A	4 OF 6	C-4	AO GATE	3	2	Б		EV	C O	03 03				
									FS	ő	03				
									ST	č	03				
									0.	ŏ	03				
									VP	oc	24				
	MAIN STEAM SUP FEEDWATER PUM		VALVE	E TO TURBINE DI	RIVEN A	UXILIARY	/								
1-MS-PCV-102B	11448-CBM-064A	4 OF 6	D-5	AO GATE	3	2	В		EV	С	03 03				
									FS	0	03				
									ST	č	03				
									•••	ŏ	03				
									VP	oc	24				
	MAIN STEAM SUP FEEDWATER PUM		VALVE	TO TURBINE DI	RIVEN AI	UXILIARY	,								
1-MS-RV-101A	11448-CBM-064A	1 OF 6	E-5	AO ANGLE	4	2	В		EV	С	RR			3	
									FS ST	C	RR	NOTE 1		3	
									VP	C OC	NA 24	NUTET			
	"A" MAIN STEAM H OPERATED RELIE		SCHA	RGE TO ATMOS	PHERE P	POWER			VF	00	24				
I-MS-RV-101B	11448-CBM-064A	2 OF 6	E-6	AO ANGLE	4	2	В		EV	С	RR			3	
									FS	С	RR			3	
									ST	C	NA	NOTE 1			
	"B" MAIN STEAM H OPERATED RELIE		DISCHA	RGE TO ATMOS	PHERE I	POWER			VP	OC	24				

			v	ALVEI	NJERV		:31 IAC							
VALVE NUMBER	DRAWING NUMBER	SHEET COOF	VALVE TYPE		ASME CLASS	ISTC V		TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-MS-RV-101C	11448-CBM-064A	3 OF 6 E-5	AO ANGLE	4	2	В		ST VP	C OC	NA 24	NOTE 1			
	"C" MAIN STEAM H OPERATED RELIE		RGE TO ATMOS	PHERE	POWER					-		.,	· .	
1-MS-SV-101A	11448-CBM-064A "A" MAIN STEAM H				2 E TO ATM	C IOS		SP	0	60				
1-MS-SV-101B	11448-CBM-064A "B" MAIN STEAM H				2 E TO ATM	C IOS		SP	0	60			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
1-MS-SV-101C	11448-CBM-064A "C" MAIN STEAM H		-		2 E TO ATN	C IOS		SP	0	60				
 1-MS-SV-102A	11448-CBM-064A "A" MAIN STEAM H		SAFETY VALV VALVE, SV DIS		2 E TO ATM	C IOS		SP	0	60				
1-MS-SV-102B	11448-CBM-064A "B" MAIN STEAM H				2 E TO ATM	C IOS		SP	0	60				
1-MS-SV-102C	11448-CBM-064A "C" MAIN STEAM H				2 E TO ATN	C IOS		SP	0	60				
1-MS-SV-103A	11448-CBM-064A "A" MAIN STEAM H				2 E TO ATM	C IOS		SP	0	60				
1-MS-SV-103B	11448-CBM-064A "B" MAIN STEAM H				2 EE TO AT	С MOS		SP	0	60				
1-MS-SV-103C	11448-CBM-064A "C" MAIN STEAM I	+ - · +	SAFETY VALV VALVE, SV DIS		2 E TO ATN	-		SP	0	60				
1-MS-SV-104A	11448-CBM-064A "A" MAIN STEAM H		SAFETY VALV VALVE, SV DIS		2 E TO ATM	C IOS		SP	0	60				
1-MS-SV-104B	11448-CBM-064A	2 OF 6 D-6	SAFETY VALV	/E 6	2	С		SP	0	60				

				•										
VALVE NUMBER	DRAWING NUMBER	SHEET	COOF	VALVE R TYPE		ASME CLASS		TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"B" MAIN STEAM H	IEADER S	AFET	Y VALVE, SV DIS	CHARGE	ΤΟ ΑΤΜ	os	 						
1-MS-SV-104C	11448-CBM-064A "C" MAIN STEAM H					2 TO ATM	C OS	 SP	0	60				
1-MS-SV-105A	11448-CBM-064A "A" MAIN STEAM H					-	-	 SP	0	60				
1-MS-SV-105B	11448-CBM-064A "B" MAIN STEAM H					2 TO ATM	-	 SP	0	60				
1-MS-SV-105C	11448-CBM-064A "C" MAIN STEAM H			· · · - · · · · · · · · ·		_	-	 SP	0	60				
1-MS-TV-101A	11448-CBM-064A	1 OF 6	D-4	AO CHECK VAL	.VE 30	2	В	 EV ST VP	C C OC	CS CS 24		1 1		
	"A" MAIN STEAM H	IEADER T	'RIP VA	ALVĖ					•••					
1-MS-TV-101B	11448-CBM-064A	2 OF 6	C-4	AO CHECK VAL	.VE 30	2	В	 EV ST VP	C C OC	CS CS 24		1 1		
	"B" MAIN STEAM H	IEADER T	RIP VA	ALVE				••						
1-MS-TV-101C	11448-CBM-064A	3 OF 6	C-4	AO CHECK VAL	.VE 30	2	В	 EV ST VP	C C OC	CS CS 24		1 1		
	"C" MAIN STEAM H	HEADER T	RIP V	ALVE				۷٣		24				

				VA	ALVEI	NSERV	ICE	IESI IA	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	· — + ·	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-RC-160	11448-CBM-086B	2 OF 3	D-7	CHECK VALVE	3	2	AC	CIV		C O C	CM CM			
	PRIMARY GRADE	WATER S	UPPLY	TO PRESSURIZ	ER RELI	IEF TANK	(LT	C	OPB			
1-RC-HCV-1556A	11448-CBM-086A LOOP FILL BOUND			AO PLUG	2	1	Е		VP	OC	24			
1-RC-HCV-1556B	11448-CBM-086A LOOP FILL BOUNE			AO PLUG	2	1	Е		VP	OC	24			
1-RC-HCV-1556C	11448-CBM-086A LOOP FILL BOUND			AO PLUG	2	1	E		VP	OC	24			
1-RC-MOV-1535	11448-CBM-086B	1 OF 3	E-4	MO GATE	3	1	В		EV	C O	03 03			
									ST	C O	03 03			
	BLOCK VALVE FO	R PRESS	URIZER	POWER OPERA	TED RE		LVE		VP	õc	24			
1-RC-MOV-1536	11448-CBM-086B	1 OF 3	D-4	MO GATE	3	1	В		EV	С	03			
									ST	0 C	03 03			
									51	ŏ	03			
	BLOCK VALVE FO	R PRESS	URIZER	POWER OPERA	TED RE		LVE		VP	OC	24			
1-RC-PCV-1455C	11448-CBM-086B	1 OF 3	D-3	AO PLUG	3	1	BC		EV	C	CS		3	
									50	0	CS		3	
									FS ST	C C	CS CS		3 3	
										Ó	CS		3	
									VP	OC	24			

				V	ALVE II	NSERV	ICE TEST TA	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	PRESSURIZER PO DISCHARGE TO P				ONTROL	VALVE		**********						
1-RC-PCV-1456	11448-CBM-086B	1 OF 3	E-3	AO PLUG	3	1	BC	EV	C	CS		3		
									0	CS		3		
								FS	С	CS		3		
								ST	C O	CS CS		3 3		
								VP	õ	24		3		
	PRESSURIZER PC							VF	00	24				
	DISCHARGE TO P				UNITOL	VALVL								
1-RC-SOV-100A1	 11448-CBM-086A	3 OF 3	B-5	SO GATE	1	 1	В	EV	C	CS				
									0	CS		16		
								FS	С	CS		16		
								ST	С	CS		16		
									0	CS		16		
	REACTOR VESSE	L VENT LI	NE ISOLA	TION VALVE	TO REFL	JELING C	AVITY	VP	OC	24				
1 BC SOV 10042	11448-CBM-086A	2 05 2		SO GATE		1	В	EV	 C	 CS				
1-RC-30V-100A2	11440-CBIVI-000A	3 OF 3	A-3	SUGATE	1	1	Б	EV	C O	CS		16		
								FS	č	cs		16		
								ST	č	CS		16		
								01	ŏ	CS		16		
								VP	õc	24		10		
	REACTOR VESSE	L VENT LI	NE ISOLA	TION VALVE	TO REFU	JELING C	AVITY							
1-RC-SOV-100B1	11448-CBM-086A	3 OF 3	B-5	SO GATE	1	 1	В	EV	с	CS		16		
									0	CS		16		
								FS	С	CS		16		
								ST	С	CS		16		
									0	CS		16		
								VP	oc	24				
	REACTOR VESSE	L VENT LI	NE ISOLA	TION VALVE	TO REFL	JELING C	AVITY							

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				• • •		IOCI (
							ISO				REL	CS	RR	NC AL
VALVE	DRAWING					-	ISTC VALVE	TEST	TEST		REQ	JUST	JUST	TEST
NUMBER	NUMBER	SHEET	COOR	TYPE	SIZE	CLASS	CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
1-RC-SOV-100B2	11448-CBM-086A	3 OF 3	A-5	SO GATE	1	1	В	EV	С	CS		16		
									0	CS		16		
								FS	С	CS		16		
								ST	С	CS		16		
									0	CS		16		
								VP	OC	24				
	REACTOR VESSE	L VENT LI	INE ISO	LATION VALVE T	O REFL	JELING C	AVITY							
 1-RC-SV-1551A	11448-CBM-086B	1 OF 3	F-6	SAFETY VALVE	6	1	с	SP	0	60				
1-10-04-1001/	PRESSURIZER SA			•··· = · · · ·· · · · ·			•	Ű,	Ŭ					
	TANK													
1-RC-SV-1551B	11448-CBM-086B	1 OF 3	E-5	SAFETY VALVE	6	 1	C	SP	0	60				
	PRESSURIZER SA	FETY VA	LVE, SV	/ DISCHARGE TO	PRESS		RELIEF							
	TANK													
1-RC-SV-1551C	 11448-CBM-086B	1 OF 3	 F-5	SAFETY VALVE	6	1	 С	 SP	0	60				
110-01-10010	PRESSURIZER SA						•	0.	•	•••				
	TANK		,			-								
1-RC-TV-1519A	11448-CBM-086B	2 OF 3	D-7	AO GATE	3	2	A CIV	EV	С	03				
	•							FS	С	03				
								LT	С	OPB				
								ST	С	03				
									-	00				
								VP	õC	24				
	PRIMARY GRADE	WATER S	SUPPLY	TO PRT-#2 RCP	SEAL S	TANDPIF	PES &	VP	oc					

					••								~~	~~	
	VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-		RR JUST RRV-	NC ALT TEST VNC-
	1-RH-005	11448-CBM-087A	1 OF 2	E-5	CHECK VALVE	10	2	С	CV	C O	CM CM				
		"B" RHR PUMP DIS	CHARGE	CHECK	VALVE					Ũ	0111				
(A).	1-RH-011	11448-CBM-087A "A" RHR PUMP DIS				10	2	С	CV	C O	CM CM				
	 1-RH-047	11448-CBM-087A RHR SUPPLY TO F ISOLATION VALVE	2 OF 2 REFUEL W	D-4	MANUAL GATE	-	_	AE CIV NMENT	LT	С	OPB				
	 1-RH-100	11448-CBM-087A RHR SUPPLY ISOL CONTAINMENT ISO	ATION TO	REFU	MANUAL GATE EL WATER STOP		2 ANK, OU	AE CIV TSIDE	LT	С	OPB				
	 1-RH-MOV-1700	11448-CBM-087A RHR PUMP SUPPL				14 	1	В	EV ST VP	0 0 0C	RR RR 24			1 1	
		11448-CBM-087A RHR PUMP SUPPL	1 OF 2	A-4	MO GATE	14	1	В	EV ST VP	0 0 0C	RR RR 24			1 1	
× •	 1-RH-MOV-1720A	11448-CBM-087A	2 OF 2	C-3	MO GATE	10	1	В	EV ST VP	0 0 00	RR RR 24			1 1	
		RHR RETURN ISO	LATION T	o "B" A(CCUMULATOR D	ISCHAF	RGE LINE	I							
	 1-RH-MOV-1720B	11448-CBM-087A	2 OF 2	B-3	MO GATE	10	1	В	EV ST VP	0 0 0C	RR RR 24			1 1	
		RHR RETURN ISO	LATION T	0 "C" A(CCUMULATOR D	ISCHAF	RGE LINE	E	••						
	 1-RH-RV-1721	11448-CBM-087A	2 OF 2	D-4	RELIEF VALVE	3	2	с.	SP	0	120				

VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE	VALVE A SIZE C	ASME LASS	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	RHR SYSTEM RE											

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SURRY UNIT 1 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

				-	 									
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	 ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC A TEST VNC-
1-RL-003	11448-CBM-118A REFUELING PURI OUTSIDE CONT IS	FICATION	FROM		 2 R CAVITY		CIV	LT	С	OPB				
1-RL-005	11448-CBM-118A REFUELING PURI CONT ISOLATION	FICATION			 2 R CAVITY			LJ.	С	OPB				
1-RL-013	11448-CBM-118A REFUELING PURI CONT ISOLATION	FICATION		MAN DIAPHRA REACTOR CAV	 2 P PUMPS			LT	С	OPB				
1-RL-015	11448-CBM-118A REFUELING PURI OUTSIDE CONT IS	FICATION	FROM		 _	AE S,	CIV	LT	С	ОРВ				

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				VP		NJERV		IEST IA	ADLL			REL	cs	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		VALVE	TEST TYPE	TEST POS	TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
1-RM-003	11448-CBM-130B	1 OF 1	B-5	CHECK VALVE	0.75	2	AC	CIV	CV	C O C	CM CM				
	RETURN TO CONT			RADIATION MOI	NITORIN	IG CABI	NET,		LT	U	OPB			• •	;
1-RM-TV-100A	11448-CBM-130B	1 OF 1	B-4	AO GATE	0.75	2	Α	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	RETURN ISOLATIC OUTSIDE CONT IS			DIATION MONITO	OR TO C	ONTAIN	MENT	Γ,							
1-RM-TV-100B	11448-CBM-130B	1 OF 1	F-8	AO GATE	0.75	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	SUPPLY ISOL TO A OUTSIDE CONT IS			R FROM CONTA	INMENT	VENT D	OUCT,		••	00	24				
1-RM-TV-100C	11448-CBM-130B	1 OF 1	E-8	AO GATE	0.75	2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
90 (A	SUPPLY ISOL TO A			R FROM CONTA	INMENT	VENT D	UCT,		٧٣	00	24				

				• -		NOLINA	IOL								
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-RS-011	11448-CBM-084B	2 OF 2	E-4	CHECK VALVE	10	2	AC	CIV	CV	C O	CM CM				
	"B" OUTSIDE REC								LT	C	OPB				
	CHECK VALVE	IRC SPRA		INSIDE CONTA		IISULAI	IUN								
1-RS-017	11448-CBM-084B	2 OF 2	D-5	CHECK VALVE	10	2	AC	CIV	CV	C O	CM CM				
									LT	č	OPB				
	"A" OUTSIDE REC CHECK VALVE	IRC SPRA	Y PUMP	INSIDE CONTA	INMENT	ISOLAT	ION								
1-RS-132	11448-CBM-084B	1 OF 2	C-4	CHECK VALVE	3	2	AC		CV	С	CM				
									LT	o c	CM 24				
	RECIRCULATION	SPRAY BI	EED LIN	NE CHECK VALV	E					_					
1-RS-135	11448-CBM-084B	1 OF 2	C-6	CHECK VALVE	3	2	AC		CV	c	CM				
									LT	o c	CM 24				
	RECIRCULATION	SPRAY BL	EED LIN		E										
1-RS-MOV-155A	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	В		EV	C O	03 03				
									ST	č	03				
									VP	0 .00	03 24				
·	"A" OUTSIDE REC CONTAINMENT SU		Y PUMP	SUCTION ISOL	ATION \	ALVE FI	ROM		VF	.00	24				
1-RS-MOV-155B	11448-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	В		EV	C	03			********	
									ST	o c	03 03				
										0	03				
	"B" OUTSIDE REC			SUCTION ISOU					VP	oc	24				
	CONTAINMENT SU			00011011000		** * 1 1									

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	VALVE SIZE	ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL TEST VNC-
1-RS-MOV-156A	11448-CBM-084B	2 OF 2	D-6	MO BFLY	10	2	Α	CIV	EV	c	03			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
										0	03				
									LT	С	OPB				
									ST	С	03				
										0	03				
									VP	OC	24				
	"A" OUTSIDE RECI CONTAINMENT IS			DISCHARGE IS	SOLATIO	N, OUTS	IDE		VP	OC	24				
			VALVE	DISCHARGE IS	SOLATION	N, OUTS 2	IDE 	CIV	VP EV	ос с	24 03				
1-RS-MOV-156B	CONTAINMENT IS	OLATION	VALVE					CIV							
1-RS-MOV-156B	CONTAINMENT IS	OLATION	VALVE					CIV		C	03				
1-RS-MOV-156B	CONTAINMENT IS	OLATION	VALVE					CIV	EV	C O C	03 03 OPB				
1-RS-MOV-156B	CONTAINMENT IS	OLATION	VALVE					CIV	EV	C O C C	03 03 OPB 03				
1-RS-MOV-156B	CONTAINMENT IS	OLATION	VALVE					CIV	EV LT ST	C O C C O	03 03 OPB 03 03				
1-RS-MOV-156B	CONTAINMENT IS	OLATION 2 OF 2	VALVE E-6	MO BFLY	10	2	A	CIV	EV	C O C C	03 03 OPB 03				

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				V.	ALVEI	NJERV	ICE		MOLL						
VALVE NUMBER	DRAWING NUMBER	SHEET (COOR	VALVE TYPE		ASME CLASS			TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-RT-02	11448-CBM-124A STEAM GENERAT VALVE					-	AE ATIOI	÷	LT	С	OPB				
1-RT-06	11448-CBM-124A STEAM GENERAT VALVE					2 MENT IS		CIV ON	ĹΤ	С	OPB				
1-RT-21	11448-CBM-124A STEAM GENERAT VALVE	· ·				_	AE ATIOI		LT	С	OPB				
1-RT-25	11448-CBM-124A STEAM GENERATI VALVE					_	AE OLAT	•••	LT	С	OPB				
1-RT-40	11448-CBM-124A STEAM GENERAT VALVE					-	AE ATIOI	÷ · ·	LT	С	OPB				
1-RT-44	11448-CBM-124A STEAM GENERAT VALVE						AE OLAT		LT	С	OPB				

				v/		NOERV	ICE	ESI I	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SA-060	11448-CBM-075G SERVICE AIR SUP ISOLATION VALVE		C-7 JNIT 1 CC	MAN GATE DNTAINMENT, I	2 NSIDE C	2 ONTAIN	AE MENT	CIV	LT	С	OPB				
1-SA-062	11448-CBM-075G SERVICE AIR SUP ISOLATION VALVE			MAN GATE NTAINMENT, (2 OUTSIDE	2 E CONTA	AË INMEI	CIV IT	LT	С	OPB				

				VA		NJERV	ICE		ADLC					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-SI-025	11448-CBM-089A	1 OF 3	F-5	CHECK VALVE	8	2	AC		CV	C O	CM CM			
	RWST SUPPLY CH	IECK VAL	VE TO C		P SUCT	ION HEA	DER		LT	С	24	1		
1-SI-032	11448-CBM-089A ACCUMULATOR M		_		1 MENT I	_		CIV _VE	LŤ	С	OPB			
1-SI-046A	11448-CBM-089A	1 OF 3	A-3	CHECK VALVE	12	2	С		CV	C O	CM CM			
	RWST SUPPLY CH	IECK VAL	VE TO "	A" LOW HEAD SI	PUMP	SUCTIO	N			Ŭ	0111			
1-SI-046B	11448-CBM-089A	1 OF 3	В-3	CHECK VALVE	12	2	С		CV	C O	CM CM			
	RWST SUPPLY CH	IECK VAL	VE TO "	B" LOW HEAD SI	PUMP	SUCTIO	N			Ŭ	0.11			
1-SI-047	11448-CBM-089A	1 OF 3	B-5	CHECK VALVE	12	2	с		CV	C O	CM CM			
	"B" LOW HEAD SI	PUMP SU		CHECK VALVE FI	ROM CO	ONTAINN	IENT			_				
1-SI-050	11448-CBM-089A	1 OF 3	C-4	CHECK VALVE	10	2	С		CV	C O	CM CM			
	"B" LOW HEAD SI	PUMP DIS	SCHARG	E CHECK VALVE	Ξ									
1-SI-053	11448-CBM-089A	2 OF 3	C-4	CHECK VALVE	2	2	С		CV	C O	CM CM			
	"B" LOW HEAD SI		NIMUM F	FLOW/TEST LINE	DISCH	IARGE CI	HECK			_				
1-SI-056	11448-CBM-089A	1 OF 3	B-7	CHECK VALVE	12	2	С		CV	C O	CM CM			
	"A" LOW HEAD SI	PUMP SU	CTION (ROMC	ONTAINM	IENT			-				
1-SI-058	11448-CBM-089A	1 OF 3	C-6	CHECK VALVE	10	2	С		CV	C O	CM CM			
	"A" LOW HEAD SI	PUMP DIS	SCHARG		Ξ					-				
1-SI-061	11448-CBM-089A	2 OF 3	B-7	CHECK VALVE	2	2	С		CV	С	СМ			

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					VA		NSERV			ADLE			05	00		NO 41
	ALVE JMBER	DRAWING NUMBER	SHEET	COOR			ASME CLASS			TEST TYPE	-	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL TEST VNC-
1-8	SI-061	11448-CBM-089A "A" LOW HEAD SH			CHECK VALVE LOW/TEST LINE		2 ARGE CH	C IECK		CV	0	СМ				
 1-S	SI-073	11448-CBM-089A ACCUMULATOR T			MAN GLOBE DE CONTAINMEN	0.75 IT ISOL	2 ATION V		CIV	LT	С	OPB				
1-8	SI-079	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C O	CM CM				
		RCS COLD LEG SI	ADMISSI	ON CHE	CK VALVE					LT	С	24				
1-5	SI-082	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C O C	CM CM 24				
		RCS COLD LEG SI	ADMISSI	ON CHE	CK VALVE					LI	C	24				
1-S	SI-085	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C O	CM CM				
		RCS COLD LEG SI	ADMISSI	ON CHE	CK VALVE					LT	С	24				
1-S	SI-088	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	С		CV	с о	CM CM				
		RCS HOT LEG SI A	DMISSIO	N CHEC	K VALVE											
1-5	SI-091	11448-CBM-089B				6	1	С		CV	C O	CM CM				
		RCS HOT LEG SI A	DMISSIO	N CHEC	K VALVE											
1-5	SI-094	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	С		CV	C O	CM CM				
		RCS HOT LEG SI A	DMISSIO	N CHEC	K VALVE											
1-5	SI-107	11448-CBM-089B	1 OF 4	B-7	CHECK VALVE	12	1	С		cv	C O	CM CM				
		"A" ACCUMULATO	R DISCHA	RGE CH	HECK VALVE											

			V P				ADLL						
DRAWING NUMBER	SHEET	COOR	VALVE TYPE				TEST TYPE			REL REQ V-			NC ALT TEST VNC-
11448-CBM-089B	1 OF 4	B-8	CHECK VALVE	12	1	С	CV	C	CM				
"A" ACCUMULATO	R COLD L	EG ADN	ISSION CHECK	VALVE				0	CIM				
11448-CBM-089B	2 OF 4	Ъ-6	CHECK VALVE	12	1	С	CV	c	CM				
"B" ACCUMULATO	RDISCHA	ARGE CH	HECK VALVE					0	CIVI				
11448-CBM-089B	2 OF 4	B-7	CHECK VALVE	12	1	С	CV	C	CM				
"B" ACCUMULATO	R COLD L	.EG ADN	ISSION CHECK	VALVE				0	CIVI				
11448-CBM-089B	3 OF 4	B-5	CHECK VALVE	12	1	С	CV	С	CM				
"C" ACCUMULATO	R DISCHA	ARGE CI	HECK VALVE					0	CIM				
11448-CBM-089B	3 OF 4	B-7	CHECK VALVE	12	1	С	cv	С	CM				
"C" ACCUMULATO	R COLD L	EG ADN	MISSION CHECK	VALVE				0	CIVI				
11448-CBM-089B	4 OF 4	F-3	CHECK VALVE	3	2	С	CV	С	CM	*			
		GING PI	UMPS TO RCS C	OLD LE	GS, INSI	DE		U	CIVI				
11448-CBM-089B	4 OF 4	E-3	CHECK VALVE	3	2	С	CV	C	CM				
		GING PI	UMPS TO RCS C	OLD LE	GS, INSI	DE		0	CIVI				
11448-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	С	CV	c	CM				
HIGH HEAD SI FRO CHECK VALVE	OM CHAR	GING PI	UMPS TO RCS H	OT LEG	SS, INSID	E CONT		U	CIVI				
11448-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	С	CV	C	CM CM				
-	NUMBER 11448-CBM-089B "A" ACCUMULATO 11448-CBM-089B "B" ACCUMULATO 11448-CBM-089B "B" ACCUMULATO 11448-CBM-089B "C" ACCUMULATO 11448-CBM-089B "C" ACCUMULATO 11448-CBM-089B HIGH HEAD SI FRO CONT CHECK VAL 11448-CBM-089B HIGH HEAD SI FRO CHECK VALVE	NUMBERSHEET11448-CBM-089B1 OF 4"A" ACCUMULATOR COLD L11448-CBM-089B2 OF 4"B" ACCUMULATOR DISCH/11448-CBM-089B2 OF 4"B" ACCUMULATOR COLD L11448-CBM-089B3 OF 4"C" ACCUMULATOR DISCH/11448-CBM-089B3 OF 4"C" ACCUMULATOR DISCH/11448-CBM-089B3 OF 4"C" ACCUMULATOR DISCH/11448-CBM-089B3 OF 4"C" ACCUMULATOR COLD L11448-CBM-089B4 OF 4HIGH HEAD SI FROM CHAR CONT CHECK VALVE11448-CBM-089B4 OF 4HIGH HEAD SI FROM CHAR CHECK VALVE	NUMBERSHEET COOR11448-CBM-089B1 OF 4B-8"A" ACCUMULATOR COLD LEG ADM11448-CBM-089B2 OF 4B-6"B" ACCUMULATOR DISCHARGE CI11448-CBM-089B2 OF 4B-7"B" ACCUMULATOR COLD LEG ADM11448-CBM-089B3 OF 4B-5"C" ACCUMULATOR DISCHARGE CI11448-CBM-089B3 OF 4B-7"C" ACCUMULATOR DISCHARGE CI11448-CBM-089B3 OF 4B-7"C" ACCUMULATOR COLD LEG ADM11448-CBM-089B3 OF 4B-7"C" ACCUMULATOR COLD LEG ADM11448-CBM-089B4 OF 4F-3HIGH HEAD SI FROM CHARGING PI CONT CHECK VALVE11448-CBM-089B4 OF 4E-3HIGH HEAD SI FROM CHARGING PI CONT CHECK VALVE11448-CBM-089B4 OF 4C-3HIGH HEAD SI FROM CHARGING PI CONT CHECK VALVE11448-CBM-089B11448-CBM-089B4 OF 4C-3HIGH HEAD SI FROM CHARGING PI CONT CHECK VALVE11448-CBM-089B	DRAWING NUMBERSHEET COORVALVE TYPE11448-CBM-089B1 OF 4B-8CHECK VALVE"A" ACCUMULATOR COLD LEG ADMISSION CHECK"11448-CBM-089B2 OF 4B-6CHECK VALVE"B" ACCUMULATOR DISCHARGE CHECK VALVE"B" ACCUMULATOR DISCHARGE CHECK VALVE"B" ACCUMULATOR COLD LEG ADMISSION CHECK11448-CBM-089B2 OF 4B-7CHECK VALVE"C" ACCUMULATOR COLD LEG ADMISSION CHECK11448-CBM-089B3 OF 4B-5CHECK VALVE"C" ACCUMULATOR DISCHARGE CHECK VALVE"C" ACCUMULATOR DISCHARGE CHECK VALVE"C" ACCUMULATOR COLD LEG ADMISSION CHECK11448-CBM-089B3 OF 4B-7CHECK VALVE"I1448-CBM-089B4 OF 4F-3CHECK VALVEHIGH HEAD SI FROM CHARGING PUMPS TO RCS C CONT CHECK VALVECONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVEHIGH HEAD SI FROM CHARGING PUMPS TO RCS C CONT CHECK VALVECHECK VALVEHIGH HEAD SI FROM CHARGING PUMPS TO RCS C CONT CHECK VALVECHECK VALVEHIGH HEAD SI FROM CHARGING PUMPS TO RCS C CONT CHECK VALVECHECK VALVE	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZE11448-CBM-089B1 OF 4B-8CHECK VALVE12"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B2 OF 4B-6CHECK VALVE12"B" ACCUMULATOR DISCHARGE CHECK VALVE11448-CBM-089B2 OF 4B-7CHECK VALVE12"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE12"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE12"C" ACCUMULATOR DISCHARGE CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE12"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B4 OF 4F-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LE CONT CHECK VALVE11448-CBM-089B4 OF 4E-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LE CONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LE CONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LE CONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEC11448-CBM-089B4 OF 4C-3CHECK VALVE3HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEC	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZESAME CLASS11448-CBM-089B1 OF 4B-8CHECK VALVE121"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B2 OF 4B-6CHECK VALVE121"B" ACCUMULATOR DISCHARGE CHECK VALVE11448-CBM-089B2 OF 4B-7CHECK VALVE121"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE121"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE121"C" ACCUMULATOR DISCHARGE CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE121"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B3 OF 4B-7CHECK VALVE121"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11448-CBM-089B4 OF 4F-3CHECK VALVE2111448-CBM-089B4 OF 4F-3CHECK VALVE32HIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSICONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE32HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSICONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE32HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSICONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE32HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSICCHECK VALVE1 <td>ISO NUMBERISO SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC CAT TYPE11448-CBM-089B1 OF 4B-8CHECK VALVE121C"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"B" ACCUMULATOR DISCHARGE CHECK VALVE121C"B" ACCUMULATOR DISCHARGE CHECK VALVE121C"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"I1448-CBM-089B3 OF 4B-5CHECK VALVE121C"C" ACCUMULATOR DISCHARGE CHECK VALVE121C"C""I1448-CBM-089B3 OF 4B-7CHECK VALVE121C"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"C""I1448-CBM-089B4 OF 4F-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVEI1448-CBM-089B4 OF 4E-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVEI1448-CBM-089B4 OF 4C-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CONT CHECK VALVEILEGS, INSIDE CONT CONT CHECK VALVEI</td> <td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSISTC VALVE CLASSTEST TYPE11448-CBM-089B1 OF 4B-8CHECK VALVE121CCV"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"I1448-CBM-089B2 OF 43-6CHECK VALVE121CCV"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"C"CCUMULATOR DISCHARGE CHECK VALVE121CCV"I1448-CBM-089B3 OF 4B-7CHECK VALVE121CCV"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE111CCV"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11CCV"I1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE11448-CBM-089B4 OF 4E-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT C</td> <td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSCAT TYPE TYPETEST TEST TEST TYPETEST TEST TEST TYPETEST TEST TEST TESTTEST TEST TYPETEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST<b< td=""><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSCAT CLASSTEST CAT TYPETEST TEST POSTEST FREQ11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM O"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"11448-CBM-089B2 OF 43-6CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B3 OF 4B-7CHECK VALVE121CCVCCM OCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OCMI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM CMI1448-CBM-089B4 OF 4</td><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVEASME SIZELSC LASSTEST TYPETEST TYPETEST POS FREQREL REQ V-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VAL</td><td>ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSTEST CASSTEST TYPETEST TYPETEST TEST TYPETEST TEST TYPETEST TEST TEST TYPEREL REQ CSV-CSV- CSV-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCMCM''A' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''A' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR OLD LEG ADMISSION CHECK VALVE121CCVCCMCMCMCM''C' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM</td><td>DRAWING NUMBER VALVE SHEET COOR VALVE TYPE VALVE SIZE CLASS CAT TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE REL FEST TYPE CSO TSET REL CSS RR REL CSS RR REL CSS RR REL CSS RR REL CSS REL CSS RR REL CSS REL CSS RR REL CSS RR CSS RR 11448-CBM-089B 10 F 4 B-8 CHECK VALVE 12 1 C CV C CM CM</td></b<></td>	ISO NUMBERISO SHEET COORVALVE TYPEVALVE SIZEASME CLASSISTC CAT TYPE11448-CBM-089B1 OF 4B-8CHECK VALVE121C"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"B" ACCUMULATOR DISCHARGE CHECK VALVE121C"B" ACCUMULATOR DISCHARGE CHECK VALVE121C"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"I1448-CBM-089B3 OF 4B-5CHECK VALVE121C"C" ACCUMULATOR DISCHARGE CHECK VALVE121C"C""I1448-CBM-089B3 OF 4B-7CHECK VALVE121C"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121C"C""I1448-CBM-089B4 OF 4F-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVEI1448-CBM-089B4 OF 4E-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVEI1448-CBM-089B4 OF 4C-3CHECK VALVE32CHIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CHECK VALVEILEGS, INSIDE CONT CONT CHECK VALVEILEGS, INSIDE CONT CONT CHECK VALVEI	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSISTC VALVE CLASSTEST TYPE11448-CBM-089B1 OF 4B-8CHECK VALVE121CCV"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"I1448-CBM-089B2 OF 43-6CHECK VALVE121CCV"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCV"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCV"C"CCUMULATOR DISCHARGE CHECK VALVE121CCV"I1448-CBM-089B3 OF 4B-7CHECK VALVE121CCV"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE111CCV"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE11CCV"I1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE11448-CBM-089B4 OF 4E-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS COLD LEGS, INSIDE CONT CHECK VALVE11448-CBM-089B4 OF 4C-3CHECK VALVE32CCVHIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT C	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSCAT TYPE TYPETEST TEST TEST TYPETEST TEST TEST TYPETEST TEST TEST TESTTEST TEST TYPETEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST TESTTEST <b< td=""><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSCAT CLASSTEST CAT TYPETEST TEST POSTEST FREQ11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM O"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"11448-CBM-089B2 OF 43-6CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B3 OF 4B-7CHECK VALVE121CCVCCM OCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OCMI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM CMI1448-CBM-089B4 OF 4</td><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVEASME SIZELSC LASSTEST TYPETEST TYPETEST POS FREQREL REQ V-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VAL</td><td>ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSTEST CASSTEST TYPETEST TYPETEST TEST TYPETEST TEST TYPETEST TEST TEST TYPEREL REQ CSV-CSV- CSV-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCMCM''A' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''A' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR OLD LEG ADMISSION CHECK VALVE121CCVCCMCMCMCM''C' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM</td><td>DRAWING NUMBER VALVE SHEET COOR VALVE TYPE VALVE SIZE CLASS CAT TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE REL FEST TYPE CSO TSET REL CSS RR REL CSS RR REL CSS RR REL CSS RR REL CSS REL CSS RR REL CSS REL CSS RR REL CSS RR CSS RR 11448-CBM-089B 10 F 4 B-8 CHECK VALVE 12 1 C CV C CM CM</td></b<>	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSCAT CLASSTEST CAT TYPETEST TEST POSTEST FREQ11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM O"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"11448-CBM-089B2 OF 43-6CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B3 OF 4B-7CHECK VALVE121CCVCCM OCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM OCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM OCMI1448-CBM-089B4 OF 4F-3CHECK VALVE32CCVCCM CMI1448-CBM-089B4 OF 4	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVEASME SIZELSC LASSTEST TYPETEST TYPETEST POS FREQREL REQ V-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCM"A" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"B" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"C" ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCM"I1448-CBM-089B3 OF 4B-5CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VALVE121CCVCCM"I1448-CBM-089B4 OF 4F-3CHECK VAL	ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSTEST CASSTEST TYPETEST TYPETEST TEST TYPETEST TEST TYPETEST TEST TEST TYPEREL REQ CSV-CSV- CSV-11448-CBM-089B1 OF 4B-8CHECK VALVE121CCVCCMCM''A' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''A' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR COLD LEG ADMISSION CHECK VALVE121CCVCCMCMCM''B' ACCUMULATOR OLD LEG ADMISSION CHECK VALVE121CCVCCMCMCMCM''C' ACCUMULATOR DISCHARGE CHECK VALVE121CCVCCM	DRAWING NUMBER VALVE SHEET COOR VALVE TYPE VALVE SIZE CLASS CAT TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE TEST TYPE REL FEST TYPE CSO TSET REL CSS RR REL CSS RR REL CSS RR REL CSS RR REL CSS REL CSS RR REL CSS REL CSS RR REL CSS RR CSS RR 11448-CBM-089B 10 F 4 B-8 CHECK VALVE 12 1 C CV C CM CM

VALVE NUMBER DRAWING NUMBER SHEET COOR VALVE TYPE VALVE VALVE SIZE CLASS CAT TYPE TEST TYPE HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE HIGH HEAD SI FROM CHARGING PUMPS TO RCS HOT LEGS, INSIDE CONT CHECK VALVE C CV 1-SI-228 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK 1-SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV LT LT LT LT LT LT LT LT LT		CM CM CM CM CM CM	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
CHECK VALVE 1-SI-228 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV 1-SI-229 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE 1 2 AC CIV CV I-SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV LT	0	CM CM CM CM			
-SI-229 LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE -SI-229 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE -SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV CV LT	0	CM CM CM CM			
-SI-229 11448-CBM-089B 4 OF 4 B-3 CHECK VALVE 6 2 C CV LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE -SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV CV LT	0 0	СМ			
LOW HEAD SI FROM LHSI PUMP TO RCS HOT LEGS, INSIDE CONT CHECK VALVE -SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV CV LT	0 0	СМ			
VALVE -SI-234 11448-CBM-089B 1 OF 4 F-3 CHECK VALVE 1 2 AC CIV CV LT	Ō	-			
LT	Ō	-			
	<u> </u>	CM			
NITROGEN SUPPLY TO ACCUMULATORS, INSIDE CONTAINMENT ISOLATION CHECK VALVE	U	OPB			
-SI-235 11448-CBM-089B 4 OF 4 F-7 CHECK VALVE 2 1 C CV	C O	CM CM			
HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE	•				
I-SI-236 11448-CBM-089B 4 OF 4 E-7 CHECK VALVE 2 1 C CV	C O	CM CM			
HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE	Ū	0			
-SI-237 11448-CBM-089B 4 OF 4 D-7 CHECK VALVE 2 1 C CV	C O	CM CM		. <u>.</u>	
HIGH HEAD SI TO RCS COLD LEG, INSIDE MISSILE BARRIER CHECK VALVE	<u> </u>	2			
1-SI-238 11448-CBM-089B 4 OF 4 D-7 CHECK VALVE 6 1 C CV	C O	CM CM			
SAFETY INJECTION SUPPLY CHECK VALVE TO RCS HOT LEG	0	0.01			
I-SI-239 11448-CBM-089B 4 OF 4 C-7 CHECK VALVE 6 1 C CV	C O	CM CM			

				VA	LVE	NSERV	ICE	151 1	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	· - • ·	TEST FREQ	REL REQ V-	CS JUST CSV-	 NC ALT TEST VNC-
	SAFETY INJECTIC	N SUPPL	Y CHECK	VALVE TO RC	S HOT L	ĒG								
1-SI-240	11448-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	С		CV	C O	CM CM			
	SAFETY INJECTIC	N SUPPL	Y CHECK	VALVE TO RCS	S HOT L	EG								
1-SI-241	11448-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC	PIV	CV	C O	CM CM			
	LOW HEAD SI TO	RCS COLI	D LEG IS	OLATION CHEC	K VALV	/E			LT	č	24			
 1-SI-242	11448-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CM			
	LOW HEAD SI TO	RCS COLI	D LEG IS	OLATION CHEC		/E			LT	o c	CM 24			
1-SI-243	11448-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	cv	C O	CM CM			
	LOW HEAD SI TO	RCS COLI	D LEG IS	OLATION CHEC		/E			LT	c	24			
1-SI-410	11448-CBM-089A	1 OF 3	F-4	CHECK VALVE	10	2	С		CV	C O	CM CM			
	RWST SUPPLY CH		VE TO C	HARGING PUM	P SUCT	ION HEA	DER			0	CIVI			
1-SI-MOV-1842	11448-CBM-089A	3 OF 3	D-7	MO GATE	3	2	В		EV ST	C O C	CS CS CS		12 12 12 12	
			_						VP	0 00	CS 24		12	
	HIGH HEAD SI FRO VALVE	OM CHAR	ging he	EADER TO RCS	COLD L	EGS ISO	LATIO	N						
1-SI-MOV-1860A	11448-CBM-089A	1 OF 3	B-7	MO GATE	12	2	В		EV ST VP	0 0 00	03 03 24			

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

				V	ALVEI	NSERV	ICE TEST I	ABLE				~~		
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	"A" LOW HEAD SI	PUMP SU	CTION IS	OLATION FRC	M CONT	AINMEN	T SUMP							
1-SI-MOV-1860B	11448-CBM-089A	1 OF 3	B-5	MO GATE	12	2	В	EV ST VP	0 0 00	03 03 24				
	"B" LOW HEAD SI	PUMP SU	CTION IS	OLATION FRO	OM CONT		T SUMP	VI	00	24				
1-SI-MOV-1862A	11448-CBM-089A	1 OF 3	A-3	MO GATE	12	2	В	EV ST VP	C C OC	03 03 24				
	"A" LOW HEAD SI	PUMP SU	CTION FF	ROM RWST						_				
1-SI-MOV-1862B	11448-CBM-089A	1 OF 3	B-3	MO GATE	12	2	В	EV ST VP	C C OC	03 03 24				
	"B" LOW HEAD SI	PUMP SU	CTION FF	ROM RWST				••	00	2-1				
1-SI-MOV-1863A	11448-CBM-089A	2 OF 3	C-5	MO GATE	8	2	В	EV ST VP	C O C O O C	03 03 03 03 03 24				
	"A" LOW HEAD SA CHARGING PUMP		ECTION P	UMP SUPPLY	' ISOLAT	ION TO		VP	00	24				
1-SI-MOV-1863B	11448-CBM-089A	2 OF 3	D-3	MO GATE	8	2	В	EV ST VP	C O C O OC	03 03 03 03 03 24				
	"B" LOW HEAD SA CHARGING PUMP		ECTION P	UMP SUPPLY	' ISOLAT	ION TO		v.	00	LŦ				
1-SI-MOV-1864A	11448-CBM-089A	2 OF 3	D-6	MO GATE	10	2	В	EV ST	C 0 C 0	03 03 03 03 03				

				V		NSERV	ICE TEST T	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-SI-MOV-1864A	11448-CBM-089A "A" LOW HEAD SI			MO GATE DISCHARGE S	10 TOP VAL	2 VE	В	VP	OC	24			
1-SI-MOV-1864B	11448-CBM-089A	2 OF 3	D-4	MO GATE	10	2	В	EV	C O	03 03			
								ST	c	03			
								01	ŏ	03			
								VP	OC	24			
	"B" LOW HEAD SI	PUMP CO	LD LEG [DISCHARGE S	TOP VAL	VE							
1-SI-MOV-1865A	11448-CBM-089B	1 OF 4	C-7	MO GATE	12	2	в	EV	С	CS		17	
									0	CS		17	
								ST	С	CS		17	
								VP	0 00	CS 24		17	
	"A" ACCUMULATO	R DISCHA	ARGE ISC	LATION VALV	E TO RC	S COLD	LEG	VF	00	24			
1-SI-MOV-1865B	11448-CBM-089B	2 OF 4	C-6	MO GATE		2	в	EV	C	CS			
									0	CS		17	
								ST	C	CS		17	
								VP	0 00	CS 24		17	
	"B" ACCUMULATO	R DISCHA	ARGE ISC	LATION VALV	E TO RC	S COLD	LEG	٧P	00	24			
 1-SI-MOV-1865C	11448-CBM-089B	3 OF 4	 C-5	MO GATE		2	 В	 EV	с	CS			
					. –				0	CS		17	
								ST	С	CS		17	
			•** •						0	CS		17	
	"C" ACCUMULATO	R DISCH	ARGE ISC	DLATION VALV	E TO RC	S COLD	LEG	VP	oc	24			
1-SI-MOV-1867C	11448-CBM-089A	3 OF 3	F-6	MO GATE		2	в	EV	с	CS		 9	
1-01-10070		5015	L -V		5	2	5		ŏ	CS		9	
								ST	č	ĊŚ		9	
									0	CS		9	
								VP	OC	24			

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				V		NJERV		ADLC					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	-	TEST FREQ	REL REQ V-	CS JUST CSV-	NC AL TEST VNC-
	HIGH HEAD SAFE		FION TO F	RCS COLD LE	G ISOLA	TION VAL	_VE						
1-SI-MOV-1867D	11448-CBM-089A	3 OF 3	F-6	MO GATE	3	2	В	EV ST VP	C O C O OC	CS CS CS CS 24		9 9 9 9	
	HIGH HEAD SAFE	TY INJECT	FION TO F	RCS COLD LE	G ISOLA	TION VAL	_VE	VP	00	24			
1-SI-MOV-1869A	11448-CBM-089A	3 OF 3	D-7	MO GATE	3	2	В	EV ST VP	C O C O OC	CS CS CS CS 24		12 12 12 12 12	
	HIGH HEAD SI FRO VALVE	OM CHAR	GING HEA	ADER TO RCS	HOT LE	gs Isol	ATION						
1-SI-MOV-1869B	11448-CBM-089A	3 OF 3	E-4	MO GATE	3	2	В	EV ST	С 0 С 0	CS CS CS CS		12 12 12 12 12	
	HIGH HEAD SI FRO VALVE	OM CHAR	GING HEA	ADER TO RCS	HOT LE	GS ISOL	ATION	VP	OC	24			
1-SI-MOV-1885A	11448-CBM-089A		B-6	MO GATE	2	2	A	EV LT ST VP	C C C OC	03 24 03 24	1		
	"A" LOW HEAD SI	PUMP MIN	IIMUM FL	OW/TEST LIN	E ISOLA	TION		••	00	- 1			
1-SI-MOV-1885B	11448-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A	EV LT ST	с с с	03 24 03	1		
	"B" LOW HEAD SI		IIMUM FL	OW/TEST LIN	E ISOLA	TION		VP	OC	24			

				V	ALVEI	NSERV	ICE TEST TA	ARLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-MOV-1885C	11448-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A	EV LT ST VP	C C C OC	03 24 03 24	1			
	"B" LOW HEAD SI		NMUM FL	LOW/TEST LIN	e Isola	TION		VF	00	24				
1-SI-MOV-1885D	11448-CBM-089A	2 OF 3	B-6	MO GATE	2	2	A	EV LT ST VP	C C C OC	03 24 03	1			
	"A" LOW HEAD SI		NIMUM FL	LOW/TEST LIN	e Isola	TION		VP	00	24				
1-SI-MOV-1890A	11448-CBM-089A	2 OF 3	C-7	MO GATE	10	2	В	EV	C O	CS CS		 18 18		
								ST VP	С О ОС	CS CS 24		18 18		
	"A" LOW HEAD SI	PUMP HO	T LEG DI	SCHARGE STO			ALVE	••	00	24				
1-SI-MOV-1890B	11448-CBM-089A	2 OF 3	E-7	MO GATE	10	2	В	EV	C O	CS CS		18 18		
								ST VP	С О ОС	CS CS 24		18 18		
	"B" LOW HEAD SI	PUMP HO	T LEG DI	SCHARGE STO		ATION V	ALVE							
1-SI-MOV-1890C	11448-CBM-089A	2 OF 3	D-7	MO GATE	10	2	В	EV	C O	CS CS		8 8		
					·			ST VP	С О ОС	CS CS 24		8 8		
	LOW HEAD SI PUN		D LEG DIS	SCHARGE STO	P ISOLA		LVE	٧٣		24				
1-SI-RV-1845A	11448-CBM-089A "A" LOW HEAD SI SAFEGUARDS AR	PUMP DIS				2 ISCHARC	-	SP	0	120				

				VA		NSERV	ICE	TEST T/	ABLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SI-RV-1845B	11448-CBM-089A LOW HEAD SI HEA SAFEGUARDS AR	ADER TO (2 DISCHAR	C GE TC)	SP	0	120				
1-SI-RV-1845C	11448-CBM-089A "B" LOW HEAD SI SAFEGUARDS AR	PUMP DIS				2 ISCHARG	C SE TO		SP	0	120				
1-SI-RV-1858A	11448-CBM-089B SI ACCUMULATOF			RELIEF VALVE	1	2	С		SP	0	120				
1-SI-RV-1858B	11448-CBM-089B SI ACCUMULATOF			RELIEF VALVE	1	2	С		SP	0	120				
1-SI-RV-1858C	11448-CBM-089B SI ACCUMULATOF			RELIEF VALVE	1	2	С		SP	0	120				
1-SI-RV-1859	11448-CBM-089B SI ACCUMULATOF			RELIEF VALVE EF VALVE	0.75	2	С		SP	0	120	NOTE 2			
1-SI-TV-100	11448-CBM-089A	3 OF 3	B-7	AO GATE	1	2	Α	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				
	NITROGEN SUPPL		CUMULA	Tors, outsidi	ECONT	AINMEN	Г		vr	00	24				
1-SI-TV-101A	11448-CBM-089B	1 OF 4	C-3	AO GATE	1	2	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				
	ACCUMULATORS CONTAINMENT IS			HARCOAL FILT	ERS, IN	SIDE									
1-SI-TV-101B	11448-CBM-089B	1 OF 4	B-2	AO GATE	1	2	A	CIV	EV FS LT ST VP	С С С С С ОС	03 03 OPB 03 24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	ACCUMULATORS CONTAINMENT IS			HARCOAL FIL	TERS, O	JTSIDE								
1-SI-TV-102A	11448-CBM-089A	1 OF 3	F-7	AO GATE	8	2	В	EV FS ST VP	0 0 0 00	03 03 03 24				
	UNIT 1 RWST TO U	JNIT 2 RV	ST CRO	SS TIE										
1-SI-TV-102B	11448-CBM-089A	1 OF 3	E-7	AO GATE	8	2	В	EV FS ST VP	0 0 0 00	03 03 03 24				
	UNIT 1 RWST TO U	JNIT 2 RV	IST CROS	SS TIE										

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-SS-TV-100A	11448-CBM-082B	2 OF 2		SO GATE	0.37			CIV	EV FS LT ST VP	С С С С С С С	03 03 OPB 03 24			
	PRESSURIZER LIC		CE SAMF	PLE LINE, INSI	DE CONT	AINMEN	IT							
1-SS-TV-100B	11448-CBM-082B	2 OF 2	F-6	AO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24			
	PRESSURIZER LIC		CE SAMF	PLE LINE, OUT	SIDE CO	NTAINM	ENT							
1-SS-TV-101A	11448-CBM-082B	2 OF 2	E-7	SO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24			
	PRESSURIZER VA		CE SAMI	PLE LINE, INSI	DE CON		ΙT		۷r	00	24			
1-SS-TV-101B	11448-CBM-082B	2 OF 2	E-6	AO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24			
	PRESSURIZER VA		CE SAMI	PLE LINE, OUT	SIDE CO	NTAINM	ENT		••	00	2,			
1-SS-TV-102A	11448-CBM-082B	2 OF 2	D-7	SO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24			

,

DRAWING NUMBER REACTOR COOLAI ISOLATION VALVE		LEGS SAM	VALVE TYPE IPLE HEADEI	SIZE	ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-		
ISOLATION VALVE			IPLE HEADEI	R, INSIDI	F CONT											
11448-CBM-082B	2 OF 2				2 0 0 117	AINME	NT									
		D-6	SO GATE	0.375	5 1	A	CIV	EV FS LT ST VP	с с с с с с	03 03 OPB 03 24						
			IPLE HEADEI	R, OUTS	IDE											
			SO GATE			AE	CIV	LT VP	C OC	OPB 24						
			SO GATE				CIV	LT VP	C OC	OPB 24						
PRESSURIZER RE	LIEF TAN	< GAS SPA	SO GATE			A	CIV	EV FS LT ST VP	с сс сс ос	03 03 OPB 03 24						
11448-CBM-082B PRESSURIZER RE	2 OF 2	C-6	AO GATE			A	CIV	EV FS LT ST VP	с с с с с с с ос	03 03 0PB 03 24						
			SO GATE	0.375	 5 1	A	CIV	EV	C	03						
C 1 F 1 F C 1 F C	CONTAINMENT ISC 11448-CBM-082B RHR SAMPLE HEA 11448-CBM-082B RHR SAMPLE HEA 11448-CBM-082B PRESSURIZER REI CONTAINMENT ISC 11448-CBM-082B	CONTAINMENT ISOLATION 1448-CBM-082B 2 OF 2 RHR SAMPLE HEADER, INSI 1448-CBM-082B 2 OF 2 RHR SAMPLE HEADER, OUT 1448-CBM-082B 2 OF 2 PRESSURIZER RELIEF TANI CONTAINMENT ISOLATION 1448-CBM-082B 2 OF 2 PRESSURIZER RELIEF TANI CONTAINMENT ISOLATION	CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-7 RHR SAMPLE HEADER, INSIDE CONTA 11448-CBM-082B 2 OF 2 F-6 RHR SAMPLE HEADER, OUTSIDE CON 11448-CBM-082B 2 OF 2 D-7 PRESSURIZER RELIEF TANK GAS SPA CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 C-6 PRESSURIZER RELIEF TANK GAS SPA CONTAINMENT ISOLATION VALVE	CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-7 SO GATE RHR SAMPLE HEADER, INSIDE CONTAINMENT ISO 11448-CBM-082B 2 OF 2 F-6 SO GATE RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISO 11448-CBM-082B 2 OF 2 D-7 SO GATE PRESSURIZER RELIEF TANK GAS SPACE SAMPLE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 C-6 AO GATE PRESSURIZER RELIEF TANK GAS SPACE SAMPLE CONTAINMENT ISOLATION VALVE	CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATIO 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, IN CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, IN CONTAINMENT ISOLATION VALVE	11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE CONTAINMENT ISOLATION VALVE	CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A	CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE 0.375 2 AE CIV RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A CIV PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A CIV	VPREACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDEVPCONTAINMENT ISOLATION VALVEI1448-CBM-082B2 OF 2F-7SO GATE0.3752AECIVLTVPRHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVEVPI1448-CBM-082B2 OF 2F-6SO GATE0.3752AECIVLTVPRHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVEI1448-CBM-082B2 OF 2D-7SO GATE0.3752ACIVEVFSITI1448-CBM-082B2 OF 2D-7SO GATE0.3752ACIVEVFSITI1448-CBM-082B2 OF 2D-7SO GATE0.3752ACIVEVFSITITSPACE SAMPLE LINE, INSIDEITAO GATE0.3752ACIVEVFSITITAO GATE0.3752ACIVEVFSITSTVPCONTAINMENT ISOLATION VALVEITAO GATE0.3752ACIVFSITST <td co<="" td=""><td>VPOCCONTAINMENT ISOLATION VALVEVPOCVP0C03752AECIVLTCVP0C03752AECIVLTCOCRHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE03752AECIVLTCOCRHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE03752AECIVLTCVPOCRHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE03752ACIVEVCFSCRHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE03752ACIVEVCFSCCI1448-CBM-082B2 OF 2D-7SO GATE0.3752ACIVEVCFSCCTCVPOCPRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE01448-CBM-082B2 OF 2C-6AO GATE0.3752ACIVEVCFSCCTCCFSCCTCCFSCCTCCFSCCTCCFSCCTCCFSCCTCCFSCCTCFSCCTCCFSCCTCCFSCCTCCFSCCTCCFSC<td>VPOC24REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDEVPOC24CONTAINMENT ISOLATION VALVE$VP$$OC$24I1448-CBM-082B2 OF 2F-7SO GATE$0.375$2AECIVLTCOPBVPOC24I1448-CBM-082B2 OF 2F-6SO GATE$0.375$2AECIVLTCOPBVPOC24I1448-CBM-082B2 OF 2F-6SO GATE$0.375$2AECIVLTCOPBII448-CBM-082B2 OF 2D-7SO GATE$0.375$2ACIVEVC03FSC03TCOPBSTC03VPOC24II448-CBM-082B2 OF 2D-7SO GATE$0.375$2ACIVEVC03CONTAINMENT ISOLATION VALVEII448-CBM-082B2 OF 2C-6AO GATE$0.375$2ACIVEVC03FSC03TCOPBSTC03VPOC24II448-CBM-082B2 OF 2C-6AO GATE0.3752ACIVEVC03VPOC24CO3STC<td< td=""><td>VPOC24VPOC24Interaction valueVPOC24Interaction valueVPOC24<td>VP OC 24 REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE UT C OPB 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, INSIDE CONTAINMENT 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OUTSIDE C 03</td><td>VP OC 24 NUMBER OF COLLATION VALVE VP OC 24 Int448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 FS C 03 VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 VP OC 24 <td colsp<="" td=""></td></td></td></td<></td>	VPOC24REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDEVPOC24CONTAINMENT ISOLATION VALVE VP OC 24I1448-CBM-082B2 OF 2F-7SO GATE 0.375 2AECIVLTCOPBVP OC 24I1448-CBM-082B2 OF 2F-6SO GATE 0.375 2AECIVLTCOPBVP OC 24I1448-CBM-082B2 OF 2F-6SO GATE 0.375 2AECIVLTCOPBII448-CBM-082B2 OF 2D-7SO GATE 0.375 2ACIVEVC03FSC03TCOPBSTC03VPOC24II448-CBM-082B2 OF 2D-7SO GATE 0.375 2ACIVEVC03CONTAINMENT ISOLATION VALVEII448-CBM-082B2 OF 2C-6AO GATE 0.375 2ACIVEVC03FSC03TCOPBSTC03VPOC24II448-CBM-082B2 OF 2C-6AO GATE0.3752ACIVEVC03VPOC24CO3STC <td< td=""><td>VPOC24VPOC24Interaction valueVPOC24Interaction valueVPOC24<td>VP OC 24 REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE UT C OPB 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 AE CIV LT C OPB 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE C 03 IT C OPB 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE C 03</td><td>VP OC 24 NUMBER OF COLLATION VALVE VP OC 24 Int448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 FS C 03 VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 VP OC 24 <td colsp<="" td=""></td></td></td></td<>	VPOC24VPOC24Interaction valueVPOC24Interaction valueVPOC24 <td>VP OC 24 REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE UT C OPB 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 AE CIV LT C OPB 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE C 03 IT C OPB 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE C 03</td> <td>VP OC 24 NUMBER OF COLLATION VALVE VP OC 24 Int448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 FS C 03 VP OC 24 Int448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 VP OC 24 <td colsp<="" td=""></td></td>	VP OC 24 REACTOR COOLANT COLD LEGS SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE UT C OPB 11448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, INSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 F-6 SO GATE 0.375 2 AE CIV LT C OPB RHR SAMPLE HEADER, OUTSIDE CONTAINMENT ISOLATION VALVE VP OC 24 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 AE CIV LT C OPB 11448-CBM-082B 2 OF 2 D-7 SO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, INSIDE C 03 IT C OPB 11448-CBM-082B 2 OF 2 C-6 AO GATE 0.375 2 A CIV EV C 03 PRESSURIZER RELIEF TANK GAS SPACE SAMPLE LINE, OUTSIDE C 03	VP OC 24 NUMBER OF COLLATION VALVE VP OC 24 Int448-CBM-082B 2 OF 2 F-7 SO GATE 0.375 2 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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC AL ⁻ TEST VNC-
1-SS-TV-106A	11448-CBM-082B	2 OF 2	E-7	SO GATE	0.375	1	A	CIV	ST VP	C OC	03 24				
	REACTOR COOLA		EGS SAN	IPLE HEADER	R, INSIDE	CONTAI	NMEN	IT							
1-SS-TV-106B	11448-CBM-082B	2 OF 2	E-6	SO GATE	0.375	i 1	A	CIV	EV FS LT ST VP	С С С С С С С С	03 03 OPB 03 24				
	REACTOR COOLA		.egs san	IPLE HEADER	R, OUTSID	E CONT	AINM	ENT							

				•											
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SV-TV-102A	11448-CBM-066A	2 OF 3	E-4	AO GATE	6	2	Α	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONDENSER AIR CONTAINMENT IS			RGE TO CON		NT, OUTS	SIDE								

			v	ALVEI	NSERV	ICE TEST T	ABLE				~~		
VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-012	11448-CBM-071A SERVICE WATER ISOLATION VALV	SUPLY HEADER	BUTTERFLY TO CHILLED W		3 STEM M/	B ANUAL	EV	С	24				
1-SW-027	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM CC WATER		3 UAL	В	EV	С	24				
1-SW-031	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM CC WATER		3 UAL	В	EV	С	24				
1-SW-035	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM CC WATER		3 UAL	В	EV	С	24				
1-SW-039	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM CC WATER		3 UAL	В	EV	С	24				
1-SW-043	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM BC WATER		NC UAL	В	EV	С	24				
1-SW-048	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM BC WATER		NC UAL	В	EV	С	24				
1-SW-052	11448-CBM-071A SERVICE WATER ISOLATION VALV	OUTLET LINE FR	BUTTERFLY OM BC WATER		NC UAL	В	EV	С	24				
1-SW-108		1 OF 2 B-4 P SERVICE WATEI			3	С	CV	C O	CM CM				
1-SW-113		1 OF 2 B-7 P SERVICE WATEI			3	C	CV	C O	CM CM				

				VA		NSERV	ICE	IESI IA	ARLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-SW-206	11448-CBM-071A CONTAINMENT IS EXCHANGER			MAN GATE FOR SERVICE W		2 DRAINS 1		CIV AT	LT	С	OPB			 *
1-SW-208	11448-CBM-071A CONTAINMENT IS EXCHANGER			MAN GATE FOR SERVICE W				CIV AT	ŁT	С	OPB			
1-SW-246	11448-CBM-071A	3 OF 4	C-8	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY H	EAT EXC	HANGER SERVI	ICE WA	TER RET	URN			Ū				
1-SW-247	11448-CBM-071A	3 OF 4	D-7	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY HI	EAT EXC	HANGER SERVI	ICE WA	TER SUF	PLY			Ū	0111			
1-SW-248	11448-CBM-071A	3 OF 4	C-7	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY HI	EAT EXC	HANGER SERVI	ICE WA	TER RET	URN			0	CIVI			
1-SW-249	11448-CBM-071A	3 OF 4	D-6	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY HI	EAT EXC	HANGER SERVI	ICE WA	TER SUP	PLY			Ū	Civi			
1-SW-250	11448-CBM-071A	3 OF 4	C-6	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY HI	EAT EXC	HANGER SERVI	ICE WA	TER RET	URN			0	Civi			
1-SW-251	11448-CBM-071A	3 OF 4	D-5	CHECK VALVE	3	3	С		CV	C O	CM CM			
	RECIRCULATION VENT VALVE	SPRAY HI	EAT EXC	HANGER SERVI	ICE WA	TER SUF	PLY			U				

				VA		NJERV		EST 1/	ADLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
1-SW-252	11448-CBM-071A	3 OF 4	C-5	CHECK VALVE	3	3	С		CV	C O	CM CM			
r ¹	RECIRCULATION	SPRAY HI	EAT EXC	HANGER SERV	ICE WA	TER RET	URN			Ū	0.11			
1-SW-253	11448-CBM-071A	3 OF 4	D-4	CHECK VALVE	3	3	С		CV	C O	CM CM			 **
	RECIRCULATION	SPRAY HI	EAT EXC	HANGER SERV	ICE WA	TER SUP	PLY			U	Civi			
1-SW-262	11448-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	С		CV	C O	CM CM			
	CHARGING PUMP	SERVICE	WATER	R PUMP DISCHAI	RGE CH	IECK VAI	LVE			U	CIVI			
1-SW-264	11448-CBM-071D CONTROL ROOM LINE ISOLATION V	CONDEN			-	3 INER BYF	B PASS		EV	0	24			
1-SW-265	11448-CBM-071D CONTROL ROOM LINE ISOLATION V	CONDEN			-	3 INER BYF	B PASS		EV	0	24			
1-SW-268	11448-CBM-071B	1 OF 2	B-6	CHECK VALVE	2	3	С		CV	C O	CM CM			
	CHARGING PUMP	SERVICE	WATER	R PUMP DISCHAI	RGE CH	IECK VAI	LVE			0	CIVI			
1-SW-313	11448-CBM-071D	1 OF 2	F-7	CHECK VALVE	3	3	С		CV	C O	CM CM			
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PL	JMP DIS	SCHARG	E CHE	СК		Ŭ	OW			
1-SW-323	11448-CBM-071D	1 OF 2	F-5	CHECK VALVE	3	3	С		CV	C O	CM CM			
	CONTROL ROOM VALVE	CONDEN	SER WA	TER SYSTEM PL	JMP DIS	SCHARGI	E CHE	СК		U	CIVI			
1-SW-773	11448-CBM-071D	2 OF 2	C-5	CHECK VALVE	4	3	С		cv	C O	CM CM			
	CONTROL ROOM VALVE	CONDEN	SER WA	TER SYSTEM PL	JMP DIS	SCHARG	E CHE	СК		U	Civi			

				VA		NJERV	ICE IESI							
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISC ISTC VALV CAT TYPE	E TEST	-	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-778	11448-CBM-071D	2 OF 2	C-4	CHECK VALVE	4	3	С	CV	C O	CM CM				
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PU	JMP DIS	SCHARG	E VALVE		0	CIM				
1-SW-839	11448-CBM-071D	2 OF 2	F-5	CHECK VALVE	3	3	С	cv	C O	CM CM				
	CONTROL ROOM	CONDENS	SER WA	TER SYSTEM DI	SCHAR	GE CHE	CK VALVE		0	CIVI				
1-SW-840	11448-CBM-071D	2 OF 2	F-4	CHECK VALVE	3	3	С	CV	C O	CM CM				
	CONTROL ROOM	CONDENS	SER WA	TER SYSTEM DI	SCHAR	E CHEC	(VALVE		0	CM				
1-SW-MOV-101A	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36	3	В	EV	c	03				
								ST VP	с ос	03 24				
	BEARING COOLIN	G WATER	R HEAT E	EXCHANGER ISC	DLATIO	N VALVE								
1-SW-MOV-101B	11448-CBM-071A	3 OF 4	B-4	MO BFLY	36	3	В	EV ST	C C	03 03	******			
		0.14/4755						VP	ŏč	24				
	BEARING COOLIN	GWATER		EXCHANGER ISC		N VALVE								
1-SW-MOV-102A	11448-CBM-071A	2 OF 4	D-6	MO BFLY	42	3	В	EV	C O	03 03				
								ST	c	03				
									0	03				
	SERVICE WATER HEAT EXCHANGE		SUPPLY	ISOLATION TO	СОМРС	DNENT C	OOLING	VP	OC	24			,	
1-SW-MOV-102B	11448-CBM-071A	2 OF 4	D-5	MO BFLY	42	3	В	EV	C	03				
								ST	O C	03 03				
								01	ŏ	03				
					001100			VP	OC	24				
	SERVICE WATER	HEADER :	SUPPLY	ISULATION TO	COMPL	JNENT C	OULING							

				V.		NSEKV	ICE LEST I	ADLC						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-SW-MOV-103A	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY	ISOLATION TO	RECIRC	SPRAY	HEAT			21	· ,			
1-SW-MOV-103B	11448-CBM-071A	3 OF 4	B-8	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY	ISOLATION TO	RECIRC	SPRAY	HEAT	V	00	24				
1-SW-MOV-103C	11448-CBM-071A	3 OF 4	B-3	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 . 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY	ISOLATION TO	RECIRC	SPRAY	HEAT	۷F	00	24				
1-SW-MOV-103D	11448-CBM-071A	3 OF 4	B-2	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY	ISOLATION TO	RECIRC	SPRAY	HEAT	VF	00	24				
1-SW-MOV-104A	11448-CBM-071A	3 OF 4	D-7	MO BFLY	24	3	В	EV	C O	RR RR			2 2	
								ST	C O	RR RR			2 2	
	SERVICE WATER OUTSIDE CONT IS			CIRC SPRAY	HEAT EX	CHANGE	ĒR,	VP	OC	24				
1-SW-MOV-104B	11448-CBM-071A	3 OF 4	D-6	MO BFLY	24	3	В	EV	C O	RR RR			2 2 2	
								ST	C O	RR RR			2 2	
	SERVICE WATER OUTSIDE CONT IS			CIRC SPRAY I	HEAT EX	CHANGE	ER,	VP	OC	24				

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				•		100010		COLI							
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS	-		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-SW-MOV-104C	11448-CBM-071A	3 OF 4	D-5	MO BFLY	24	3	В		EV	C O	RR RR			2 2	
									ST	C O	RR RR			2 2	
									VP	õc	24			-	
	SERVICE WATER OUTSIDE CONT IS			ECIRC SPRAY	HEAT EX	CHANGI	ER,								
1-SW-MOV-104D	11448-CBM-071A	3 OF 4	D-4	MO BFLY	24	3	В		EV	c	RR			2	
									ST	o c	RR RR			2 2	
									51	ŏ	RR			2	
									VP	OC	24				
	SERVICE WATER OUTSIDE CONT IS			ECIRC SPRAY	HEAT EX	CHANG	ER,								
1-SW-MOV-105A	11448-CBM-071A	3 OF 4	D-8	MO BFLY	24	3	В		EV	С	RR			2	
									ST	o c	RR RR			2 2	
									ST	ŏ	RR			2	
									VP	oc	24			_	
	SERVICE WATER OUTSIDE CONT IS			" RECIRC SPR	AY HEA	Γ EXCHA	NGER,								
1-SW-MOV-105B	11448-CBM-071A	3 OF 4	D-7	MO BFLY	24	3	В		EV	C	RR			2	
									sт	0 C	RR RR			2 2	
									31	ŏ	RR			2	
									VP	oc	24				
	SERVICE WATER OUTSIDE CONT IS			" RECIRC SPR	AY HEA	F EXCHA	NGER,						•		
1-SW-MOV-105C	11448-CBM-071A	3 OF 4	D-6	MO BFLY	24	3	В		EV	C	RR			2	
									6T	0	RR			2	
									ST	C O	RR RR			2 2	
									VP	ŏč	24			-	
	SERVICE WATER OUTSIDE CONT IS			" RECIRC SPR	AY HEA	T EXCHA	NGER,								

				V		NSERV	ICE TEST T	ARLE				~~		
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
1-SW-MOV-105D	11448-CBM-071A	3 OF 4	D-5	MO BFLY	24	3	В	EV ST VP	C O C O O C	RR RR RR RR 24			2 2 2 2	
	SERVICE WATER I OUTSIDE CONT IS			" RECIRC SPR	AY HEAT	T EXCHA	NGER,							
1-SW-PCV-100A	11448-CBM-071D	1 OF 2	F-7	AO GATE	3	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL							
1-SW-PCV-100B	11448-CBM-071D	1 OF 2	F-5	AO GATE	3	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL							
1-SW-PCV-100C	11448-CBM-071D	1 OF 2	F-3	AO GATE	3	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL	51	0	INA	NOTET			
1-SW-PCV-100D	11448-CBM-071D	2 OF 2	F-5	AO GATE	3	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL	01	Ŭ	147.1	NOTET			
1-SW-PCV-100E	11448-CBM-071D	2 OF 2	F-4	AO GATE	3	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL	51	0		NOTE			
1-SW-PCV-101A	11448-CBM-071D	1 OF 2	E-8	AO GATE	3	3	В	EV FS ST	C C C	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDENS	SER WAT	ER SYSTEM P	RESSUF	RE CONT	ROL	51	U	(1)/1	NOTET			
1-SW-PCV-101B	11448-CBM-071D	1 OF 2	E-6	AO GATE	3	3	В	EV FS ST	C C C	03 03 NA	NOTE 1			
	CONTROL ROOM				DECOUR			31	C	11/21	NOTET			

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				• -				مل من ^ر م ا						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-SW-PCV-101C	11448-CBM-071D	1 OF 2	E-4	AO GATE	3	3	В	EV FS ST	C C C	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PI	RESSUF	RE CONT	ROL							
1-SW-PCV-101D	11448-CBM-071D	2 OF 2	D-5	AO GATE	3	3	В	EV FS ST	C C C	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PI	RESSUF	RE CONT	ROL	01	Ŭ		NOTET			
1-SW-PCV-101E	11448-CBM-071D	2 OF 2	D-3	AO GATE	3	3	В	EV FS ST	с с с	03 03 NA	NOTE 1			
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PI	RESSUF	RE CONR	OL							
1-SW-RV-124D	11448-CBM-071D CONTROL ROOM				0.75	3	С	SP	0	120	NOTE 2			
1-SW-RV-124E	11448-CBM-071D CONTROL ROOM			RELIEF VALVE IEF VALVE	0.75	3	С	SP	0	120	NOTE 2			
1-SW-TCV-108A	11448-CBM-071B	1 OF 2	E-7	AO GATE	1.5	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	SERVICE WATER CONTROL VALVE	TO CHAR	GING PL	IMP LUBE OIL C	OOLER		RATURE	0.	C					
1-SW-TCV-108B	11448-CBM-071B	1 OF 2	E-5	AO GATE	1.5	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	SERVICE WATER	TO CHAR	GING PL	JMP LUBE OIL C	OOLER		RATURE							
1-SW-TCV-108C	11448-CBM-071B	1 OF 2	E-4	AO GATE	1.5	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	SERVICE WATER CONTROL VALVE	TO CHAR	GING PL	JMP LUBE OIL C	OOLER	TEMPER	RATURE		-					

				V P		NJERV	ICE LEST LA	NDLE							
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-	
2-SW-333	11448-CBM-071D	1 OF 2	F-3	CHECK VALVE	3	3	С	CV	C O	CM CM				******	
	CONTROL ROOM	CONDEN	SER WA	TER SYSTEM PL	JMP DIS	SCHARG	E CHECK								

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				V/		NSERV	ICE		ADLC						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VA-001	11448-CBM-083A VENT LINE FROM VALVE	1 OF 3 PRIMARY		MAN GATE DT, OUTSIDE (2 CONTAIN	2 IMENT IS	AE SOLAT	CIV ION	LT	С	OPB				
1-VA-006	11448-CBM-083B VENT LINE FROM VALVE		F-2 TO VENT PO	MAN GATE DT, INSIDE CO	2 NTAINM	2 ENT ISO		CIV N	LT	С	OPB				

				•		102111									
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL TEST VNC-
1-VG-TV-109A	11448-CBM-083B	1 OF 3	E-3	AO GATE	2	2	A	CIV	EV	С	03				
									FS LT	C C	03 OPB				
									ST VP	C OC	03 24				
	VENT LINE ISOL F STRIPPERS, INSID			AINS TRANSF	ER TANK	(TO GAS	5								
1-VG-TV-109B	11448-CBM-083A	1 OF 3	F-7	AO GATE	2	2	Α	CIV	EV	С	03				
									FS LT	C C	03 OPB				
									ST	č	03				
	VENT LINE ISOL F								VP	OC	24				

				• ~											
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VP-012	11448-CBM-066A	2 OF 3	F-4	CHECK VALVE	6	2	AC	CIV	CV	C O	CM CM				
									LT	С	OPB				
	CONDENSER AIR CONTAIN ISOLATI				INMEN	INSIDE									

				V P		NSERV	ICE IESI I	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-VS-285	11448-CBB-041A	2 OF 4	C-6	MANUAL GATE	3	3	В	EV	C O	24			 *	
	CONTROL ROOM	CHILLED	WATER	CROSS TIE ISO	LATION	VALVE			0	24				
1-VS-288	11448-CBB-041A	2 OF 4	B-7	CHECK VALVE	2	3	С	CV	C O	CM CM			· .	
	CONTROL ROOM	CHILLED	WATER	PUMP DISCHAR	GE CH	ECK VAL	VE		0	CIVI				
1-VS-292	11448-CBB-041A	2 OF 4	B-5	CHECK VALVE	2	3	С	CV	C	CM				
	CONTROL ROOM	CHILLED	WATER	PUMP DISCHAR	GE CH	ECK VAL	VE		0	СМ				
1-VS-296	11448-CBB-041A	2 OF 4	B-4	CHECK VALVE	2	3	С	cv	C O	CM				
	CONTROL ROOM	CHILLED	WATER	PUMP DISCHAR	GE CH	ECK VAL	VE		0	СМ				
1-VS-571	11448-CBB-041A	2 OF 4	C-7	MAN GATE	3	3	В	EV	C O	 24 24				
	CONTROL ROOM		WATER	SYSTEM HEADE	ER CRO	SS CONI	NECT		0	24				
1-VS-641	11448-CBB-041A	3 OF 4	D-6	CHECK VALVE	4	3	С	CV	C O	CM CM				
-	CONTROL ROOM	CHILLED	WATER	SYSTEM PUMP	DISCHA	ARGE CH	ECK		0	Civi				
1-VS-645	11448-CBB-041A	3 OF 4	D-5	CHECK VALVE	4	3	С	CV	C O	CM CM				
	CONTROL ROOM	CHILLED	WATER	SYSTEM PUMP	DISCHA	ARGE CH	ECK		0	Civi				
1-VS-672	11448-CBB-041A	3 OF 4	F-6	CHECK VALVE	4	3	С	CV	C O	CM				
	CONTROL ROOM VALVE	CHILLED	WATER	SYSTEM DISCH	ARGE H	IEADER	CHECK		0	СМ				
1-VS-975	11448-CBB-041A	2 OF 4	C-3	CHECK VALVE	1	3	С	CV	C O	CM				
	CONTROL ROOM	CHILLED	WATER	SYSTEM ISOLA		ALVE			U	СМ				
1-VS-MOV-100A	11448-CBB-006A	1 OF 2	C-4	MO BFLY	36	2	AE CIV	LT VP	C OC	OPB 24				

				v	ALVE	NJERV	ICE	IESI I/	ADLE						
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL TEST VNC-
	CONTAINMENT PU	JRGE SUF	PPLY, INS		MENT IS	OLATIO	N VAL	VE							
1-VS-MOV-100B	11448-CBB-006A	1 OF 2	C-3	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PU	URGE SUP	PPLY, OU	TSIDE CONTA	AINMENT	ISOLATI	ON		VE	00	2 4	•*			
1-VS-MOV-100C	11448-CBB-006A	1 OF 2	D-4	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PU	JRGE EXH	IAUST, IN	ISIDE CONTA	INMENT	ISOLATIO	ON V	ALVE	VP	00	24				
1-VS-MOV-100D	11448-CBB-006A	1 OF 2	D-3	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
	CONTAINMENT PL VALVE	JRGE EXH	IAUST, O	UTSIDE CON	TAIN- ME	NT ISOL	ATION	I	VF	00	24				
1-VS-MOV-101	11448-CBB-006A	1 OF 2	D-3	MO BFLY	8	2	AE	CIV	LT	С	OPB				
	CONTAINMENT PU	JRGE BYF	PASS, OU	TSIDE CONT	AINMENT	ISOLATI	ON		VP	OC	24				
1-VS-MOV-102	11448-CBB-006A	1 OF 2	C-3	MO BFLY	18	2	AE	CIV	LT	c	OPB				
	CONTAINMENT VACUUM BREAKER							VP	OC	24					

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VALVE INSERVICE TEST TABLE NOTES

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NOTE 1

The ASME OM Code, ISTC 5100, describes the exemption of stroke-time testing for power operated control valves whose only safety function is to fail in the safety direction. ISTC 5100 states:

"All valves shall be tested in accordance with the applicable requirements of ISTC-3000, and as identified below, except for power-operated control valves that only have a fail-safe safety function.

For power-operated control valves that only have a fail-safe safety function, the requirements for valve stroke-time measurement testing, the associated stroke-time test acceptance criteria, and any corrective actions that would result from stroke-time testing need not be met. For these valves, all other applicable requirements of ISTC-3000, and as identified below, shall be met."

The power-operated control valves listed in Table 1 have only a failsafe function. The ASME OM Code as described in ISTC 5100 will be applied to the control valves listed in Table 1. ISTC 5100 has replaced Code Case OMN-8 in the 2004 Edition, 2006 Addenda.

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NOTE 1 (Cont.)

Table 1

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

Valve Number 1-SW-PCV-100A 1-SW-PCV-100B 1-SW-PCV-100C	System Service Water	OM Category B	ASME Class 3	Function Control Room Condenser Water System Pressure Control Valves
1-SW-PCV-100D 1-SW-PCV-100E 1-SW-PCV-101A 1-SW-PCV-101B				
1-SW-PCV-101C 1-SW-PCV-101D 1-SW-PCV-101E				

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NOTE 1 (Cont.)

Table 1

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

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NOTE 2

The ASME OM Code, Appendix I, I-1200, Definitions, defines a thermal relief application as:

"a relief device whose only overpressure protection function is to protect isolated components, systems, or portions of systems from fluid expansion caused by changes in fluid temperature."

According to Appendix I, I-1390, Test Frequency, Classes 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application:

"Tests shall be performed on all Class 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

The valves listed in Table 2 serve a thermal relief application and will be tested in accordance with I-1390.

NOTE 2 (Cont.)

Table 2

Thermal	ASME	
Relief Valve Number	Code Class	Function
1-CC-RV-112A 1-CC-RV-112B 1-CC-RV-112C	3	These relief valves protect the CC piping and components related to the recirculation air cooler from over-pressure in the event of an accident requiring isolation of this line (non- safety function). They also protect the piping associated with containment penetrations 9 through 14.
1-CC-RV-116A 1-CC-RV-116B 1-CC-RV-116C	3	These relief valves protect the CC piping that supplies cooling water to the RCP thermal barrier heat exchangers from over-pressure in the event of an inadvertent actuation of the downstream trip valve. Thermal loads could cause the pressure in the isolated CC piping to increase past the design limit of the pressure boundary.
1-CC-RV-119A 1-CC-RV-119B	3	These relief valves open to protect the RHR heat exchangers from over-pressurization while the heat exchangers are isolated within the containment structure. During an accident, the temperature increase in containment could cause the water in the heat exchanger to expand resulting in a significant increase in pressure with the potential for damage.
1-CC-RV-124	3	The primary function of this relief valve is to protect the piping and cooling coils related to cooling of the pedestals and primary shield from over-pressure in the event they are isolated and subjected to thermal expansion. During a LOCA this section of CC piping is isolated and will be subjected to heating. If such an event should occur, the piping associated with penetrations Nos. 1 & 5 could be subjected to an overpressure condition thus jeopardizing containment integrity.
1-CC-RV-138A 1-CC-RV-138B 1-CC-RV-138C	3	These relief valves open to protect the CC piping and shroud cooling coils from over-pressure in the event of thermal heating when the CC lines are isolated (TV-105 (205) closed).

NOTE 2 (Cont.)

Table 2

Thermal	ASME	
Relief	Code	
Valve Number	Class	Function
1-SI-RV-1859	2	This relief valve is on the SI accumulator test line and protects penetration 106.
1-SW-RV-124D 1-SW-RV-124E	3	During maintenance periods when it may be required to isolate the condensers for 1-VS-E-4D,E, these valves protect the chiller condensers from over pressurization in event the isolated condensers are subjected to heating.

4.5 VALVE TEST PROGRAM RELIEF REQUESTS

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

Serial No. 13-268 Docket Nos. 50-280 Enclosure 1, Attachment 4

RELIEF REQUEST V-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i) Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control and Safety Injection

Category: A for 1-CH-MOV-1115B and D, and 1-SI-MOV-1885A-D AC for 1-SI-25

Class: 2

Function: RWST Isolation Valves

2.0 <u>Applicable Code Edition and Addenda</u>

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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ISTC-3630(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in ISTC-3630(e) above shall be declared inoperable and be either repaired or replaced.

4.0 Reason for Request

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

RELIEF REQUEST V-1 (Cont.)

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

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

5.0 Proposed Alternatives and Bases for Use

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

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

RELIEF REQUEST V-1 (Cont.)

6.0 Duration of the Proposed Alternative

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The proposed alternatives described in Relief Request V-1 will be used for the Surry Power Station Unit 1 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 1 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to V-1 was approved by the NRC.

Pump Relief Request V-1 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

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8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

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

ISTC-9200 does require that 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.

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System: Main Steam

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

Category: B

Class: 2

Function: Main Steam Line Trip Valves

Cold Shutdown Justification

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

Testing Frequency

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

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

The Code requires the measurement of elapsed time from initiation of steam line isolation to full valve closure, which is a less conservative test.

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System: Component Cooling

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

Category: B

Class: 3

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

Cold Shutdown Justification

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

Testing Frequency

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

System: Reactor Coolant

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

Category: BC

Class: 1

Function: Pressurizer Power Operated Relief Valves

Cold Shutdown Justification

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

Testing Frequency

These valves will be tested on approach to Cold Shutdown.

System: Chemical and Volume Control

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

Category: B

Class: 2

Function: Charging Pump Suction from Volume Control Tanks

Cold Shutdown Justification

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

Testing Frequency

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

System: Chemical and Volume Control

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

Category: A

Class: 2

Function: Reactor Coolant Pump Seal Water Return

Cold Shutdown Justification:

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

Testing Frequency

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

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System: Chemical and Volume Control

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

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

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

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

Cold Shutdown Justification

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

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

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

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

Testing Frequency

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

System: Chemical and Volume Control

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

Category: B

Class: 2

Function: Normal Charging Header Isolation

Cold Shutdown Justification

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

Testing Frequency

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

System: Safety Injection

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

Category: B

Class: 2

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

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.3, two safety injection subsystems, which include one operable low head safety injection pump, must be operable when the reactor is critical. If this valve was stroked during power operation and failed in the close position, the Low Head Safety Injection System would be rendered inoperable.

Testing Frequency

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

System: Safety Injection

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

Category: B

Class: 2

Function: High Head Safety Injection Isolation

Cold Shutdown Justification

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

Testing Frequency

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

System: Chemical and Volume Control

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

Category: B

Class: 2

Function: Emergency and Manual Emergency Boration Line Isolation Valve

Cold Shutdown Justification

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

Testing Frequency

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

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System: Steam Generator Blowdown

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

Category: B

Class: 2

Function: Steam Generator Blowdown Isolation

Cold Shutdown Justification

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

Testing Frequency

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

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System: Safety Injection

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

Category: B

Class: 2

Function: High Head Safety Injection to reactor Coolant System

Cold Shutdown Justification

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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.

Testing Frequency

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

System: Component Cooling

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

Category: B

Class: 3

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

Cold Shutdown Justification

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

Testing Frequency

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

System: Feedwater

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

Category: B

Class: NC

Function: Main Feedwater Regulating and Regulating Bypass Isolation Valves

Cold Shutdown Justification

These valves are in positions required to sustain power operation. Full stroke exercising the valves would result in a reactor trip. The main feedwater regulating valves 1-FW-FCV-1478, 1488 and 1498 move during normal operation as they perform their regulating function. In order to perform a partial stroke test during normal operation, the plant would have to reduce power to cause the valve disks to move. Reducing power for the purpose of performing an exercise test is considered impractical according to the NRC response to Comment 2.4.5-1 in NUREG-1482, Revision 0, Appendix G. Appendix G was omitted from NUREG-1482, Revision 1, along with Comment 2.4.5-1. However, IST Engineering still considers reducing power for the purpose of performing an exercise.

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

Testing Frequency

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

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System: Component Cooling

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

Category: B

Class: 3

Function: Charging Pump Seal Cooling Surge Tank Level Control Valve

Cold Shutdown Justification

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

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

Testing Frequency

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

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

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Cold Shutdown Justification

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

Testing Frequency

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

System: Safety Injection

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

Category: B

Class: 2

Function: Accumulator Discharge Isolation Valves to RCS Cold Leg

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.2.d, the accumulator discharge isolation valves 1-SI-MOV-1865A, B and C shall be blocked open by de-energizing the valve motor operators when the reactor coolant system pressure is greater than 1000 psig. These valves could be called upon to close when the reactor coolant system pressure is less than 1000 psig. If these valves were stroked during power operation and failed in the close position, the corresponding accumulator would be rendered inoperable and thus decrease plant safety. Also, the valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

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

System: Safety Injection

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

Category: B

Class: 2

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

Cold Shutdown Justification

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

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

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

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COLD SHUTDOWN JUSTIFICATION CSV-18 (Cont.)

Testing Frequency

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

System : Circulating Water

Valve(s):	1-CW-MOV-100A	1-CW-MOV-106A
	1-CW-MOV-100B	1-CW-MOV-106B
	1-CW-MOV-100C	1-CW-MOV-106C
	1-CW-MOV-100D	1-CW-MOV-106D

Category: B

Class: 3 (1-CW-MOV-106A to 106D) and NC (1-CW-MOV-100A to 100D)

Function: Main condenser outlet/inlet isolation valves

Cold Shutdown Justification

During plant operation these valves are open to provide for the circulation of cooling water (river water) through the main condenser. These valves can be full stroke exercised during normal operation. However, when the circulating water is above 80 F, exercising the valves to the closed position will result in a reduction of condenser vacuum and loss of MWe, and may cause the operators to ramp the unit down during the test.

Due to the recent turbine upgrade, there is reduced margin with condenser vacuum. Therefore, there is a possibility that the unit must ramp down to test these valves when the circulating water temperature is above 80 F. Prior to the turbine upgrade, the unit lost about 10 MWe when testing these valves at elevated circulating water temperatures during the summer time. With the turbine upgrade, the unit will lose greater than 20 MWe. Additionally, the loss of vacuum may cause the operators to ramp the unit down during the test.

The valve controllers on the inlet isolation valves (1-CW-MOV-106A, B, C and D) do not allow for part-stroke exercising. The outlet isolation valves (1-CW-MOV-100A, B, C and D) can be throttled and will be part-stroke exercised every quarter as required by ISTC-3521(b).

Testing Frequency

These valves will be full stroke exercised every quarter except when the circulating water temperature is greater than 80 °F. In this case, the valves will be full stroke exercised every cold shutdown but not more frequently than once every three months. The outlet isolation valves (1-CW-MOV-100A, B, C and D) will be part-stroke exercised every quarter.

4.7 VALVE: TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

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

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

REACTOR REFUELING JUSTIFICATION RRV-1

System: Residual Heat Removal

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

Category: B

Class: 1

Function: RHR Supply and Return Isolation Valves

Reactor Refueling Justification

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

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

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

Testing Frequency

These valves will be full stroke exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-2

System: Service Water

Valve(s):	1-SW-MOV-103A	1-SW-MOV-104C
	1-SW-MOV-103B	1-SW-MOV-104D
	1-SW-MOV-103C	1-SW-MOV-105A
	1-SW-MO ₃ V-103D	1-SW-MOV-105B
	1-SW-MOV-104A	1-SW-MOV-105C
	1-SW-MOV-104B	1-SW-MOV-105D

Category: B

Class: 3

Function: Recirculation Spray Heat Exchanger Isolation Valves

Reactor Refueling Justification

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

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

REACTOR REFUELING JUSTIFICATION RRV-2 (Cont.)

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

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

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

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

Testing Frequency

These valves will be exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-3

System: Main Steam System

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

Category: B

Class: 2

Function: Main Steam Header Discharge to Atmosphere Pressure Control Valves

Reactor Refueling Justification

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

If the plant is at power, upstream isolation valves must be closed manually. Then the pressure control valves must be stroked and observed locally when performing the failsafe test. Given that test personnel must stand near the high temperature main steam lines and valves when manipulating the upstream manual isolation valves, and the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel when performed under high temperature conditions. To ensure the safety of test personnel, this test should be performed during reactor refueling outages when the main steam lines and the main steam valve house are cooler.

Testing Frequency

These valves will be exercised closed every reactor refueling.

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REACTOR REFUELING JUSTIFICATION RRV-4

System: Chemical and Volume Control

Valve(s): 1-CH-MOV-1373

Category: B

Class: 2

Function: Charging Pump Common Recirculation Header Isolation Valve

Reactor Refueling Justification

This normally open motor operated valve is located on the common recirculation header downstream from the charging pumps. During a small break LOCA event, isolation of the recirculation line is required when the RCS pressure drops below 1000 psig. In this event, valve 1-CH-MOV-1373 would have to close if charging pump 1-CH-P-1B is the running pump and the "H" emergency bus were to fail. Pump 1-CH-P-1B is powered by the "J" emergency bus and the downstream dedicated recirculation line isolation valve 1-CH-MOV-1275B is powered by the "H" bus. With the "H" bus failed, emergency procedure 1-E-1 calls for 1-CH-MOV-1373 to be closed if a response is not obtained when closing 1-CH-MOV-1275B.

This valve should not be stroke time tested to the closed position during normal power operation because failure of the valve in the partially closed or full closed position during testing when the plant is at power would challenge the operability of all three charging (high head safety injection) pumps.

Also, the charging pumps must provide RCP seal injection while the plant is at cold shutdown and the RCS is pressurized. Failure of the valve in the partially closed or full closed position during testing when the plant is at cold shutdown would challenge the operability of all three charging pumps. Therefore, this valve should not be partially stroked or full stroked during power operation or during cold shutdown. Deferring stroke time testing for this valve to each reactor refueling shutdown is consistent with the guidance given in NUREG-1482, Revision 1, Section 3.1.1(1).

Testing Frequency

This valve will be full stroke exercised 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 are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

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

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

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System: Emergency Generator

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

Category: B

Class: NC

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

ISTC Code Requirements Which Will Not Be Met

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

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.

Alternate Testing

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

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

System: EE

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

Category: B

Class: NC

Function: Diesel Fuel Oil Pump Discharge Valves

ISTC Code Requirements Which Will Not Be Met

Measure stroke time.

Basis for Alternate Testing

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

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

Alternate Testing

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

System: Refer to Table VNC-3

Valve(s): Refer to Table VNC-3

Category: Refer to Table VNC-3

Class: Refer to Table VNC-3

Function: Refer to Table VNC-3

ISTC Code Requirements Which Will Not Be Met

Measure stroke time

Basis for Alternate Testing

The ASME OM Code, ISTC-5100, describes the exemption of stroke-time testing for power operated control valves whose only safety function is to fail in the safety direction. ISTC-5100 states:

"All valves shall be tested in accordance with the applicable requirements of ISTC-3000, and as identified below, except for power-operated control valves that only have a fail-safe safety function.

For power-operated control valves that only have a fail-safe safety function, the requirements for valve stroke-time measurement testing, the associated stroke-time test acceptance criteria, and any corrective actions that would result from stroke-time testing need not be met. For these valves, all other applicable requirements of ISTC-3000, and as identified below, shall be met"

The power-operated control valves listed in Table VNC-3 have only a failsafe function. We will be applying ISTC-5100 to the testing of the control valves listed in Table VNC-3.

Alternate Testing

The control valves listed in Table VNC-3 will be tested to the requirements of ISTC-5100.

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

Table VNC-3

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

System: EE

Valve(s): 1-EE-RV-103 1-EE-RV-105 1-EE-RV-106 1-EE-RV-108

Category: C

Class: NC

Function: Diesel Fuel Oil Pump Discharge Relief Valves

ISTC, Appendix I Code Requirements Which Will Not Be Met

According to ASME OM Appendix I, I-8130(a), "Test Media. Valves shall be tested with the normal system operating fluid and temperature for which they are designed. Alternative liquids and different temperatures may be used, provided the requirements of I-8300 are met." The normal system operating fluid for the diesel fuel oil pump discharge relief valves is diesel fuel oil. The valves are tested with water.

Basis for Alternate Testing

Safety and relief valves used in liquid service are certified by the manufacturers with water in accordance with the requirements of the National Board Inspection Code. This certification process applies to valves used in diesel fuel oil service. Also, there is no correlation from water to diesel fuel oil provided by the manufacturer.

To test the relief valves with diesel fuel oil would require a separate set of test equipment. The current test equipment would be contaminated if fuel oil was used and would not be suitable for use with relief valves that are used in water service.

Testing the set point pressure of the diesel fuel oil pump discharge relief valves with water instead of diesel fuel oil is an industry accepted practice and provides adequate assurance that the relief valves will function properly and protect the diesel fuel oil pump discharge piping.

Alternate Testing

The set pressure test for the diesel fuel oil pump discharge relief valves will be performed with water instead of diesel fuel oil.

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5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

A record of each pump will be maintained in accordance with ISTB-9100 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other identification number,

2) a copy or summary of the manufacturer's acceptance test report if available,

3) a copy of the pump manufacturer's operating limits.

A record of inservice test plans will be maintained in accordance with ISTB-9200 that includes the following:

1) category of each pump,

2) the hydraulic circuit to be used,

3) the location and type of measurement for the required test parameters and

4) the method of determining reference values which are not directly measured by instrumentation.

A record of test results will be maintained in accordance with ISTA-9230 that includes the following:

1) equipment identification,

2) date of test or examination,

3) reason for test or examination (e.g., post maintenance, routine inservice test or examination, establishing reference values, etc.),

4) test or examination procedure used;

5) identification of test equipment used;

6) calibration records;

7) values of measured parameters;

8) comparison with allowable ranges of test and examination values, and analysis of deviations;

9) requirement for corrective action; and

10) printed (or typed) name and signature of the person(s) responsible for conducting and analyzing the test and examination.

In accordance with ISTA-9240, the Owner shall maintain records of corrective action that shall include a summary of the corrective actions made, the subsequent inservice test or examination, confirmation of operational adequacy, and the printed (or typed) name and signature of the person(s) responsible for the corrective action and verification of results.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

5.2 VALVE INSERVICE TESTING PROGRAM

A record of each valve will be maintained in accordance with ISTC-9110 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other unique identification number,

2) a copy or summary of the manufacturer' acceptance test report if available,

3) preservice test results and

4) limiting value of full stroke time.

This IST Program Plan meets the requirements of ISTC-9200, Test Plans. A record of test results will be maintained in accordance with ISTA-9230. A record of corrective action will be maintained in accordance with ISTA-9240. The Valve Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

6.0 QUALITY ASSURANCE PROGRAM

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

ENCLOSURE 2

SURRY POWER STATION UNIT 2 FIFTH INTERVAL INSERVICE TESTING PROGRAM

- Attachment 1 Summary of Proposed Relief Requests
- Attachment 2 Proposed Relief Requests
- Attachment 3 Inservice Testing Program Fifth Testing Interval Update Summary
- Attachment 4 Inservice Testing Program Plan for Pumps and Valves, Fifth Testing Interval

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

Serial No. 13-268 Docket Nos. 50-281 Enclosure 2

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ATTACHMENT 1

SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM

SUMMARY OF PROPOSED RELIEF REQUESTS FOR THE FIFTH 10 YEAR TESTING INTERVAL

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM SUMMARY OF PROPOSED RELIEF REQUESTS FOR THE UPCOMING 10 YEAR TESTING INTERVAL (INTERVAL 5)

Interval 5 Relief		Interval 4 Relief	
<u>Request</u> G-1	Relief Request Description General program relief to use OMN-20, which allows for the application of a 25% grace period when scheduling tests.	request None	Comments Other plants have submitted similar relief requests and at least one plant (Quad Cities) has received NRC approval. This issue was discussed during the last ASME OM Code/IST Owners Group meetings held in December 2012.
			The NRC representative discussed Code Case OMN-20, which allows for a 25% grace period when performing IST tests. Having this Code case will solve the issue with TS 3.0.2 and TS 4.0.2, which allow a 25% grace for TS SRs, but not for IST tests that do not have an associated SR. NRC stated that several utilities have already requested relief to implement the draft Code Case. A relief request will be submitted using OMN-20 for the SPS Interval 5 update.
P-1	Allows for a base reference value of 0.05 ips for smooth running pumps.	P-1	North Anna received NRC approval for a similar relief request. Several plants have received NRC approval for similar relief requests within the last 3 years.
P-2	Relief from testing the RHR pumps every quarter.	P-2	North Anna received NRC approval for a similar relief request. There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request for the following reasons.
			 Performing the pump test during plant cool down interrupts the cool down process and distracts the Operators from their primary task of safely bringing the plant to a cold shutdown condition. The RCS water temperature is near 200°F when performing the pump test at the "first practical opportunity" which is much higher than when performing the pump test following maintenance with the water temperature near 80°F. The 100°F difference in water temperature affects the comparison of differential pressure values measured at hot conditions to reference values measured at cold conditions. This temperature difference must be accounted for in the test

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SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM SUMMARY OF PROPOSED RELIEF REQUESTS FOR THE UPCOMING 10 YEAR TESTING INTERVAL (INTERVAL 5)

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Interval 5 Relief Request	Relief Request Description	Interval 4 Relief request	Comments
			 procedure. 3) Performing the pump test "at the first practical opportunity" provides no benefits in terms of testing at the "as found condition" because the pump has already been operating for about 6 to 10 hours before the test can be performed. 4) The pumps will be operating at cold conditions for a large majority of the time the pumps are needed.
P-3	Relief from the Code required 2% accuracy for the boric acid transfer pump suction pressure instruments (current accuracy is 3%).	P-4	Two other plants received NRC approval for similar relief requests.
P-4	Relief from the Code required analog pressure indicator full scale being less than or equal to 3 times the reference value for the charging pump cooling water pumps.	P-5	One other plant received NRC approval for a similar relief request.
P-5	Relief from having to use the 1.03% upper action limit for the comprehensive tests. The upper required action limit is increased to 1.06% per Code Case OMN-19. Applies to all ASME Classed pumps except the CS pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the current test loop configuration.	None	There are no submitted or approved relief requests for other plants that are similar to P-5. For pumps that have a specific design basis accident flow rate in the credited safety analysis (e.g., technical specifications, technical requirements program, or updated safety analysis) the NRC expects that the Owner also perform a pump periodic verification (PPV) test. A PPV test is a test that verifies a pump can meet the required (differential or discharge) pressure as applicable, at its highest design basis accident flow rate.
P-6	Allows for the use of a pump curve for testing the main component cooling CC pumps per ASME OM Code Case OMN-16.	P-3	North Anna received NRC approval for a similar relief request. The Interval 4 relief request used Code Case OMN-9, Use of a Pump Curve for Testing for the emergency CC pumps. OMN-9 is being replaced by OMN-16 of the same title for plants subject to latter editions of the Code. Code Case OMN-16 is being included in Revision 1 to RG 1.192, which is the RG used by the NRC to approve code cases for use without a relief request. Revision 1 is expected to be approved for use by the NRC in the second quarter 2014. The decision was made to go

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SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM SUMMARY OF PROPOSED RELIEF REQUESTS FOR THE UPCOMING 10 YEAR TESTING INTERVAL (INTERVAL 5)

Interval 5 Relief Request	Relief Request Description	Interval 4 Relief request	Comments
			forward with a relief requests using Code Case OMN-16 in case the RG is not approved by 5/10/2014.
P-7	Allows for the use of a pump curve for the quarterly testing the charging pumps per ASME OM Code Case OMN-16.	None	 North Anna received NRC approval for a relief request to use OMN-9. P-7 will be added for the quarterly test for the charging pumps. The basis for the relief is as follows. Plant conditions may not be the same as when the reference values were established. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system.
V-1	Allows a RWST isolation valve to exceed its leak limit if overall leakage to the RWST is within the overall limit.	V-2	North Anna received NRC approval for a similar relief request.

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ATTACHMENT 2

SURRY POWER STATION UNIT 1 INSERVICE TESTING PROGRAM

PROPOSED RELIEF REQUESTS FOR THE FIFTH 10 YEAR TESTING INTERVAL

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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RELIEF REQUEST G-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(ii), Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

All Pumps and Valves contained within the Inservice Testing Program scope

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

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Code Paragraph	Description
ISTA-3120(a)	"The frequency for the inservice testing shall be in
	accordance with the requirements of Section 1ST."
ISTB-3400	Frequency of Inservice Tests
ISTC-3510	Exercising Test Frequency
ISTC-3540	Manual Valves
ISTC-3630(a)	Frequency
ISTC-3700	Position Verification Testing
ISTC-5221 (c)(3)	"At least one valve from each group shall be
	disassembled and examined at each refueling outage;
	all valves in a group shall be disassembled and
	examined at least once every 8 years."
Appendix I, I-	Test Frequencies, Class 1 Pressure Relief Valves
1320	
Appendix I, I-	Test Frequencies, Class 1 Nonreclosing Pressure
1330	Relief Devices
Appendix I, I-	Test Frequencies - Class 1 Pressure Relief Valves that
1340	are used for Thermal Relief Application
Appendix I, I-	Test Frequencies - Class 2 and 3 Pressure Relief
1350	Valves
Appendix I, I-	Test Frequencies - Class 2 and 3 Nonreclosing
1360	Pressure Relief Devices
Appendix 1, I-	Test Frequencies - Class 2 and 3 Primary
1370	Containment Vacuum Relief Valves

Code Paragraph	Description
Appendix I, I- 1380	Test Frequencies - Class 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves
Appendix I, I- 1390	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application
Appendix II, II-4000(a)(1)	Performance Improvement Activities Interval
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities Interval

4.0 Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section 1ST establishes the inservice test frequency for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in the Table 3.2 of NUREG 1482, Revision 1) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow for a less than or equal to 25% extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (TS 4.0.2). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies irrespective of allowances provided under TS Administrative Controls (i.e., TS 6.4.I, "Inservice Testing Program," invokes TS 4.0.2 for various OM Code frequencies).

The lack of a tolerance band on the ASME OM Code inservice test frequency restricts operational flexibility. There may be a conflict where a surveillance test could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after a plant condition or associated Limiting Condition for Operation (LCO) is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can be and should be performed.

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RELIEF REQUEST G-1 (Cont.)

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in TS 4.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

Thus, just as with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

5.0 Proposed Alternative and Bases for Use

Code Case OMN-20 is included in the ASME OM Code, 2009 Edition and will be used as the alternative to the frequencies of the ASME OM Code.

The requirements of Code Case OMN-20 are described below.

ASME OM Division: 1 Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

- a. Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in the table below. The specified time period between tests may be reduced or extended as follows:
 - 1. For periods specified as less than 2 years, the period may be extended by up to 25% for any given test.
 - 2. For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
 - 3. All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

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RELIEF REQUEST G-1 (Cont.)

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) and other less than two year test frequencies not specified in the table below.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, *Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants,* as Subsection ISTD contains its own rules for period extensions.

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
x Years	x calendar years where 'x' is a whole number of years ≥ 2

 b. Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by ASME OM Division: 1 Section IST 2009 Edition through OMa-2011 Addenda and earlier editions and addenda of ASME OM Code.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request G-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

The following relief request for another plant that is similar to Relief Request G-1 was approved by the NRC.

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RELIEF REQUEST G-1 (Cont.)

Request Number RV-01 for Quad Cities Units 1 and 2 was approved by the NRC by letter dated 2/14/2013 (TAC Nos. ME7981 through ME7988, ME7990 through ME7995.)

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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2. Surry TS Paragraph 4.0.2

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3. Surry TS 6.4.I, Inservice Testing Program

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RELIEF REQUEST P-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i) Alternative provides acceptable level of quality and safety.

1.0 <u>ASME Code Components Affected</u>

Refer to Table P-1.1

6.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

7.0 <u>Applicable Code Requirements</u>

ISTB-3300, "Reference Values"

ISTB-3300(a) requires that initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, "Preservice Testing," or from the results of the first inservice test.

ISTB-3300(d) requires that reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.

ISTB-3300(f) requires that all subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ISTB-5120, "Inservice Testing" (Centrifugal Pumps, Except Vertical Line Shaft Centrifugal Pumps)

ISTB-5121(e) and ISTB-5123(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5121-1. For example, if vibration exceeds either 6Vr, or 0.7 in/sec, the pump is in the required action range.

ISTB-5220, "Inservice Testing" (Vertical Line Shaft Centrifugal Pumps)

ISTB-5221(e) and ISTB-5223(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5221-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5221-1.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 <u>Reason for Request</u>

The pumps listed in Table P-1.1 tend to be smooth running pumps. Each pump listed in Table P-1.1 has at least one vibration reference value (Vr) that is currently less than 0.05 inches per second (ips). Small values for Vr produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5121-1 and ISTB-5221-1 as less than or equal to 2.5Vr. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action if the measured vibration parameter exceeds this acceptable range.

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

To avoid unnecessary corrective action, a minimum value for Vr of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1.1 where the measured reference value is less than 0.05 ips.

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

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Surry Predictive Maintenance Program. The

Surry Predictive Maintenance Program currently employs predictive monitoring techniques such as:

- vibration monitoring and analysis beyond that required by ISTB, and
- oil sampling and analysis where applicable (e.g., for pumps with sufficiently large oil reservoirs).

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

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

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-1.1, if a measured reference value is below 0.05 ips for a particular vibration measurement location, then subsequent test results for that location may be compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-1 requests relief from the specific ISTB requirements identified in this request.

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to Relief Request P-1 were approved by the NRC.

Pump Relief Request P-1 for North Anna 1 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777).

Pump Relief Request PRR8 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

Pump Relief Request PRR8 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Table P-1.1

Pump		Code	OM			Pump Speed
Groups	System	Class	Group	Description	Pump Type	(rpm)
1-CC-P-1C 1-CC-P-1D	Component Cooling.	3	A	Component Cooling Water Pumps	Centrifugal	1185
1-CH-P-2C 1-CH-P-2D	Chemical and Volume Control	2	A	Boric Acid Transfer Pumps	Centrifugal	3500
2-CC-P-2A 2-CC-P-2B	Component Cooling	3	A	Component Cooling Water Pump to Charging Pump	Centrifugal	3500
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Chemical and Volume Control/Safety Injection	2	A	High Head Safety Injection/Charging Pump	Centrifugal	6018
2-FW-P-3A	Auxiliary Feedwater	3	В	Auxiliary Feedwater Motor Driven Pump	Centrifugal	3560
2-RH-P-1A 2-RH-P-1B	Residual Heat Removal	2	A	Residual Heat Removal Pump	Centrifugal	1780
2-SW-P-10A 2-SW-P-10B	Service Water	3	A	Service Water Pump to Charging Pump	Centrifugal	3500

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RELIEF REQUEST P-2

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i). Code requirement is impractical.

Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Residual Heat Removal

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3400, "Frequency of Inservice Tests," states: "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

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

4.0 Reason for Request

ISTB-3400 and Table ISTB-3400-1

The residual heat removal (RHR) pumps are located inside containment. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RCS is maintained at 2235 psig and the containment atmosphere is maintained at sub-atmospheric pressure during normal operation. The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 460 psig. Therefore, testing the RHR pumps during normal operation is not possible.

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RELIEF REQUEST P-2

5.0 Proposed Alternative and Bases for Use

ISTB-3400 and Table ISTB-3400-1

These pumps will be tested every cold shutdown outage and reactor refueling outage, unless the pump has been tested within the previous three months. (During back-to-back cold shutdown or refueling outages, the test period remains valid for three months following each test, and no additional periodic testing needs to be performed within this three month test period.) For a cold shutdown or reactor refueling that extends longer than three months, the pumps will be tested every three months in accordance with ISTB 3400-1.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-2 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

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A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC4251 and MC4252)" dated September 28, 2004.

The following relief requests for other plants that are similar to Relief Request P-2 were approved by the NRC.

Pump Relief Request P-2 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR7 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131) and applies to ISTB-3400 and Table ISTB-3400-1.

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RELIEF REQUEST P-2 (Cont.)

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-3

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i). Code requirement is impractical. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Pump(s): 1-CH-P-2C 1-CH-P-2D

System: Chemical and Volume Control

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason for Request

Table ISTB-3500-1

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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.

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RELIEF REQUEST P-3 (Cont.)

ISTB-3510(b)(1)

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

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

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

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

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

Computing the Code allowed error for differential pressure for an inlet pressure gauge with 2% accuracy and a 0 to 5 psig range and a discharge pressure instrument with 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%.

5.0 Proposed Alternative and Bases for Use

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

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-3 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to portions of P-3 were approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441). Note that Relief Request PRR-03 only applies to the full scale range requirements in ISTB-3510(b)(1), and not to the instrument accuracy requirements in Table ISTB-3500-1.

Pump Relief Request PRR006 for Fermi 2 was approved by the NRC by letter dated 76/2010 (TAC NOS. ME2548, ME2549, ME2551) and applies to Table ISTB-3510-1.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-4

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Component Cooling Water

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 <u>Reason for Request</u>

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

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

5.0 Proposed Alternative and Bases for Use

Inlet pressure for the Group A tests will be measured with gauges that have a full-scale of 0 to 3.5 psig.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to portions of P-4 was approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441).

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-5

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-5.1

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-5123, "Comprehensive Test Procedure" refers to Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

ISTB-5223, "Comprehensive Test Procedure" refers to Table ISTB-5221-1, "Vertical Line Shaft Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

For some pump tests, Surry Power Station has had difficulty implementing the upper required action range limit of 1.03% above the established hydraulic parameter reference value for the comprehensive pump test. The difficulty arises when normal data scatter yields (1) a low measured reference value, and (2) high measured values for subsequent inservice tests. In these cases, some of the test data trend high near the upper required action range limit and may exceed the upper limit on occasion. The problem can be more severe for pumps with low differential pressures (50 psid or less) due to the smaller acceptable range.

5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-5.1, an upper required action limit of 1.06% times the reference value will be applied to the comprehensive pump test in accordance with ASME OM Code Case OMN-19, Alternative Upper Limit for the Comprehensive Pump Test. Also, for pumps that have a design basis accident flow rate, a pump periodic verification (PPV) test will be performed. Table P-5.1 identifies the pumps that have a design basis accident flow rate and indicates that a pump periodic verification test will be performed for these pumps.

Table P-5.1 includes all of the ASME Code Class pumps in the Surry IST program except for the containment spray (CS) pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the existing test loop configuration. Therefore, the upper limit of 1.03% times the reference value will still be applied to the comprehensive pump test for the CS pumps. The reason the remaining pumps are included in the relief request is that data scatter can affect future tests for any of these pumps.

The following requirements shall be applied to the PPV test.

- 1) Apply the PPV test to pumps with a design basis accident flow rate as identified in Table P-5.1.
- 2) Performed the PPV test at least once every 2 years.
- 3) Determine if a PPV test is required before declaring a pump operable following replacement, repair, or maintenance on the pump.
- 4) Declared the pump inoperable if the PPV test flow rate and associated differential pressure cannot be achieved.
- 5) Maintain the necessary records for PPV test, including the applicable test parameters (e.g., flow rate and the associated differential pressure and speed for variable speed pumps) and their basis.
- 6) Account for the PPV test instrument accuracies in the test acceptance criteria.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 and ISTB-5223, and Table ISTB-5121-1 and Table ISTB-5221-1 as described above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-5 requests relief from the specific ISTB requirements identified in this request.

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RELIEF REQUEST P-5 (Cont.)

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-5 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

None

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Table P-5.1

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-CC-P-1C 1-CC-P-1D	Component Cooling	3	Component Cooling Water Pumps	Centrifugal	None	No
1-CH-P-2C 1-CH-P-2D	Chemical and Volume Control	2	Boric Acid Transfer Pumps	Centrifugal	None	No
2-CC-P-2A 2-CC-P-2B	Component Cooling	3	Component Cooling Water Pump to Charging Pump	Centrifugal	30	Yes
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Chemical and Volume Control/Safety Injection	2	High Head Safety Injection/Charging Pump	Centrifugal	436	Yes
2-FW-P-2	Auxiliary Feedwater	3	Auxiliary Feedwater Turbine Driven Pump	Centrifugal	400	Yes
2-FW-P-3A 2-FW-P-3B	Auxiliary Feedwater	3	Auxiliary Feedwater Motor Driven Pump	Centrifugal	300	Yes
2-RH-P-1A 2-RH-P-1B	Residual Heat Removal	2	Residual Heat Removal Pump	Centrifugal	None	No
2-RS-P-1A 2-RS-P-1B	Recirculation Spray	3	Inside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	3100	Yes
2-RS-P-2A 2-RS-P-2B	Recirculation Spray	3	Outside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	2900	Yes
2-SI-P-1A 2-SI-P-1B	Safety Injection	3	Low Head Safety Injection Pump	Vertical Line Shaft Centrifugal	2901	Yes

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RELIEF REQUEST P-5 (Cont.)

Table P-5.1 (Cont.)

Pump Groups	System	Code ** Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
2-SW-P-10A 2-SW-P-10B	Service Water	3	Service Water Pump to Charging Pump	Centrifugal	42	Yes

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RELIEF REQUEST P-6

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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Pump(s): 1-CC-P-1C 1-CC-P-1D

System: Component Cooling

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason 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.

5.0 <u>Proposed Alternative and Bases for Use</u>

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-6 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-6 will no longer be necessary.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

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RELIEF REQUEST P-6 (Cont.)

These relief requests are similar to P-6 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-7

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

Function: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system.

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

Plant conditions may not be the same as when the reference values were established when performing the quarterly Group A tests. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system and causes undesirable perturbations within the Reactor Coolant System.

Therefore, pumps will be tested in a range of flows and the results will be compared to acceptance criteria based a portion of the pump curve and the hydraulic acceptance criteria given in ISTB.

Past vibration data for the subject pumps have been reviewed and it has been determined that pump vibration does not vary significantly with flow rate over the range of the test flow rates. This alternative to the requirements of ISTB-5121 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

The charging/safety Injection pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-7 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-7 will no longer be necessary.

7.0 <u>Precedents</u>

The following relief requests for other plants that are similar to P-7 were approved by the NRC.

Pump Relief Request P-8 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

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RELIEF REQUEST P-7 (Cont.)

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-7 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST V-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Valve(s):	2-CH-MOV-2115B	2-SI-MOV-2885A
. ,	2-CH-MOV-2115D	2-SI-MOV-2885B
	2-SI-25	2-SI-MOV-2885C
		2-SI-MOV-2885D

System: Chemical and Volume Control and Safety Injection

Category: A for 2-CH-MOV-2115B and D, and 2-SI-MOV-2885A-D AC for 1-SI-25

Class: 2

Function: RWST Isolation Valves

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTC-3630(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in ISTC-3630(e) above shall be declared inoperable and be either repaired or replaced.

4.0 Reason for Request

Valves 2-CH-MOV-2115B and D, and 2-SI-25 are in the supply line to the charging pumps from the RWST. Valves 2-SI-MOV-2885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

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RELIEF REQUEST V-1 (Cont.)

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

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

5.0 Proposed Alternatives and Bases for Use

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

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

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RELIEF REQUEST V-1 (Cont.)

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternatives described in Relief Request V-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to V-1 was approved by the NRC.

Pump Relief Request V-1 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Serial No. 13-268 Docket Nos. 50-281 Enclosure 2

ATTACHMENT 3

SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM FIFTH TESTING INTERVAL UPDATE SUMMARY

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

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SURRY POWER STATION UNIT 2 INSERVICE TESTING PROGRAM FIFTH TESTING INTERVAL UPDATE SUMMARY

The Surry Unit 2 ASME Inservice Testing (IST) Program for Pumps and Valves has been updated for the fifth 10 year testing interval which starts on May 10th, 2014. The Unit 2 IST program has the same fifth 10 year testing interval start date as Unit 1.

This update is required every 10 years by the Code of Federal Regulations, 10 CFR 50.55a(f)(4)(ii) which states in part that the IST programs "must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval." The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 2004 Edition, the 2005 Addenda and the 2006 Addenda. The Code reference became effective on July 21st, 2011 and applies to the fifth IST interval for Surry Unit 2. The Surry Unit 2 IST program has been updated to comply with the latest OM Code edition.

There are no significant technical changes to the ASME OM Code scope and testing requirements between the Surry IST Program fourth interval, which was based on the ASME OM Code, 1998 Edition and 2000 Addenda, and the fifth interval.

Fifth Interval IST Program Update Summary

Below is a section by section summary of changes between the fourth interval IST program and the fifth interval IST program for Surry Unit 2.

Section 1.0 INTRODUCTION

The starting and ending dates for the fifth interval are described

Section 2.0 GENERAL PROGRAM DEVELOPMENT

References to the ASME OM Code, 1998 Edition and 2000 Addenda, were replaced by references to the ASME OM Code, 2004 Edition 2005 Addenda and 2006 Addenda. A new subsection, Section 2.3 Program Relief Requests, was added.

Section 2.1 Program Scope

Revision number was deleted for RG 1.26 reference. General reference to the RG is adequate.

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Section 2.21 Program Update

Interval reference was updated.

Section 2.3 Program Relief Requests

This section was added in order to document Relief Request G-1. Relief Request G-1 allows for grace on the time period between periodic tests. For tests with a frequency of less than 2 years, a grace period of 25% of the frequency is allowed and for tests with a frequency greater than two years, 6 months are allowed. This relief request is supported by the ASME Code Case OMN-20.

Section 3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

Section 3.1 Program Development Philosophy

Minor editorial changes were made to this section.

Section 3.2 Program Implementation

No changes were made to this section.

Section 3.3 Program Administration

There were no changes to this section.

Section 3.4 Pump Reference List

There were no changes to this section.

Section 3.5 Pump Inservice Test Table

Minor editorial changes were made. Changes to relief requests are described in Section 3.6. Specific vibration points were removed from the tables.

In addition to minor editorial changes, the following changes were made to the PUMP INSERVICE TEST TABLE:

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Unit 2	
Pump No.	Comments/Program Change
1-CC-P-1C 1-CC-P-1D	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-3 was renumbered to P-6 for Interval 5.
1-CH-P-2C 1-CH-P-2D	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-4 was renumbered to P-3 for Interval 5. Relief Request P-1 for smooth running pumps was added to 1-CH-P-2C.
2-CC-P-2A 2-CC-P-2B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. The Interval 4 Relief Request P-5 was renumbered to P-4 for Interval 5. Relief Request P-1 for smooth running pumps was added to 2-CC-P-2B.
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-7 was added to allow for the use of a pump curve for the Group A quarterly pump test per ASME OM Code Case OMN-16. Relief Request P-1 for smooth running pumps was added to 2-CH-P- 1A and 2-CH-P-1B.
2-FW-P-2 2-FW-P-3A 2-FW-P-3B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to 2-FW-P-3A.

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Unit 2	
Pump No.	Comments/Program Change
2-RH-P-1A 2-RH-P-1B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test. Relief Request P-1 for smooth running pumps was added to both pumps.
	There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request Relief.
2-RS-P-1A 2-RS-P-1B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
2-RS-P-2A 2-RS-P-2B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
2-SI-P-1A 2-SI-P-1B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.
2-SW-P-10A 2-SW-P-10B	Program Change: Relief Request P-5 was added to allow for the use of a hydraulic parameter upper limit of 1.06% for the comprehensive pump test.

Section 3.6 Pump Test Program Relief Requests

The relief requests that were carried over from the fourth interval were approved for use by the NRC for the fourth interval. All relief requests for the fifth interval have to be approved by the NRC regardless of their approval status from the fourth interval.

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Unit 2	
Relief Request	Program Change
P-1	Relief Request P-1 was carried over from the fourth interval and establishes a minimum reference value of 0.05 ips to be used for vibration testing for the pumps listed in Table P-1.1. The Code references were updated. The bases for including pumps in Table P-1.1 is that there is at least one vibration reference value (V _r) that is currently less than 0.05 inches per second (ips) assigned to each pump.
P-2	Relief Request P-2 was carried over from the fourth interval and allows residual heat removal pumps 2-RH-P-1A and 2- RH-P-1B to be tested during cold shutdowns.
	There was a provision in the Surry Interval 4 Relief Request P-2 that stated, "These pumps will be tested every cold shutdown outage and reactor refueling outage at the first practical opportunity after containment sub-atmospheric pressure is relieved, unless the pump has been tested within the previous three months." The provision "at the first practical opportunity after containment sub-atmospheric pressure is relieved" was removed for the Interval 5 relief request Relief.
P-3	Relief Request P-3 was carried over from the fourth interval (formally P-4). This request allows relief from requiring 2% accuracy on the inlet pressure gauges of 1-CH-P-2C and 1-CH-P-2D for group A tests as well as relief from requiring full scale range to be less than or equal to 3 times the reference value.
P-4	Relief Request P-4 was carried over from the fourth interval (formally P-5). This request provides relief from requiring full scale range to be less than or equal to 3 times the reference value for the inlet pressure gauges monitoring 2-CC-P-2A and 2-CC-P-2B.

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Unit 2		
Relief Request	Program Change	
P-5	Relief Request P-5 has been added to the IST Program and increases the upper required action limit on comprehensive pump tests from 1.03% to 1.06% per OM Code Case OMN-19. This applies to all ASME classed pumps except for the CS pumps due to the test loop configurations ability to meet the design basis accident flow rate.	
P-6	Relief Request P-6 was carried over from the fourth interval (formally P-3). The former P-3 relief was based off of OM Code Case OMN-9. OMN-9 is being replaced by OMN-16 and carries that same title. Relief Request P-6 allows for the use of a pump curve for testing the main component cooling pumps 1-CC-P-1C and 1-CC-P-1D.	
P-7	Relief Request P-7 has been added to the IST Program and allows for the use of a pump curve for quarterly testing the charging pumps 2-CH-P-1A, 2-CH-P-1B and 2-CH-P-1C per ASME OM Code Case OMN-16.	

Section 3.7 Alternative Testing for Non-Code Pumps.

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

Unit 2 Non-Code Alternative Testing	Comments/Program Change
PNC-1	PNC-1 was carried over from the fourth interval and applies to 1-EE-P-1B and 1-EE-P-1E. The Code references were updated and verified.

Section 4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTON

Section 4.1 Program Development Philosophy

Minor editorial changes were made to this section.

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Section 4.2 Program Implementation

The Code references were updated.

Section 4.3 Program Administration

There were no changes to this section.

Section 4.4 Valve Inservice Test Table

Minor editorial changes were made in the valve table description and the valve table. Note 1 was updated to reflect the change of ASME OM Code Case OMN-8 being incorporated into ISTC-5100. There were no scope changes from Interval 4 to Interval 5 for valve testing. The cold shutdown and reactor refueling justifications were renumbered as described in Sections 4.6 and 4.7 below.

Section 4.5 Valve Test Program Relief Requests

Unit 2	
Relief Request	Program Change
V-1	Relief Request V-1 was carried over from the fourth interval (formally V-2) and allows for flexibility with combined leak rates of valves on flow paths to the RWST.

Interval 4 Relief Request V-1 was withdrawn because the NRC found it unnecessary in their safety revaluation report. Interval 4 Relief Requests V-3, V-4 and V-5 were deleted from the Interval 4 program as check valves were moved to the check valve condition monitoring program.

4.6 Valve Test Program Cold Shutdown Justifications

During the course of the fourth interval, certain cold shutdown justifications were either withdrawn or replaced. The cold shutdown justification numbers for the fifth interval have been reordered to eliminate gaps in the number sequence. Also, the technical specification (TS) references were updated and minor editorial changes were made. Cold shutdown justifications with a change are discussed below.

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Program Change	
CSV number changed from CSV-5 to CSV-4.	
CSV number changed from CSV-6 to CSV-5.	
CSV number changed from CSV-7 to CSV-6.	
CSV number changed from CSV-8 to CSV-7. Valve category for 2-CH-MOV-2289A was revised from A to B.	
CSV number changed from CSV-9 to CSV-8. Valve category was revised from A to B. TS reference revised from TS 3.3.A.8 to TS 3.3.A.3 and the verbiage revised to reflect the current TS. The technical basis for the deferral did not change.	
CSV number changed from CSV-10 to CSV-9. Valve category was revised from A to B.	
CSV number changed from CSV-11 to CSV-10.	
CSV number changed from CSV-12 to CSV-11.	
CSV number changed from CSV-13 to CSV-12. Valve category	
was revised from A to B. Reference to TS 3.3.A.9 was deleted	
from the CSV. TS 3.3.A.9 was deleted from the current TS. The	
technical basis for the deferral did not change.	
CSV number changed from CSV-14 to CSV-13.	
CSV number changed from CSV-15 to CSV-14.	
CSV number changed from CSV-16 to CSV-15.	
CSV number changed from CSV-17 to CSV-16.	
CSV number changed from CSV-18 to CSV-17. TS reference revised from TS 3.3.A.10 to TS 3.3.A.2.d to reflect the current TS. The technical basis for the deferral did not change.	
CSV number changed from CSV-19 to CSV-18.	

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Unit 2 Cold Shutdown Justification	Program Change
CSV-19	CSV number changed from CSV-24 to CSV-19. Valve class for valves 1-CW-MOV-100A to 100D was revised from 3 to NC (non-Class).

4.7 Valve Test Program Reactor Refueling Justifications

During the course of the fourth interval, certain reactor refueling justifications were either withdrawn or replaced. The reactor refueling justification numbers for the fifth interval have been reordered to eliminate gaps in the number sequence as described below. There were no technical changes or the need for TS or Code reference changes to any of the reactor refueling justifications.

Unit 2 Reactor Refueling Justification	Program Change
RRV-1	RRV number changed from RRV-18 to RRV-1. Valve class for 2- RH-MOV-2720A was revised from 1 to 2.
RRV-2	RRV number changed from RRV-23 to RRV-2.
RRV-3	RRV number changed from RRV-24 to RRV-3.
RRV-4	RRV number changed from RRV-31 to RRV-4.

Section 4.8 Alternative Testing for Non-Code Valves

This section deals with valves that are outside the ASME Class 1, 2 and 3 boundaries and considered non-Code valves. Relief from Code provisions is not required for non-Code valves. However, cases where the Code provisions are not met are documented in this section. The non-Code alternative test numbers for the fifth interval have been reordered to eliminate gaps in the number sequence as described below. There were no technical changes or the need for TS reference changes to any of the non-Code alternative test descriptions.

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Unit 2 Non-Code	
Alternative Test	Program Change
VNC-1	VNC number changed from VNC-2 to VNC-1 and minor editorial changes were made.
VNC-2	VNC number changed from VNC-3 to VNC-2.
VNC-3	VNC number changed from VNC-5 to VNC-3. VNC-3 was updated to reflect the change of ASME OM Code Case OMN-8 being incorporated into ISTC-5100.
VNC-4	VNC number changed from VNC-7 to VNC-4. Valve category was revised from B to C.

Section 5.0 REPORTING OF INSERVICE TEST RESULTS

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There were no changes to this section.

Section 6.0 QUALITY ASSURANCE PROGRAM

There were no changes to this section.

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Serial No. 13-268 Docket Nos. 50-281 Enclosure 2

ATTACHMENT 4

SURRY UNIT 2 INSERVICE TESTING PROGRAM PLAN FIFTH TESTING INTERVAL

REVISION 0

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VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

Serial No. 13-268 Docket Nos. 50-281 Enclosure 2, Attachment 4

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)

SURRY POWER STATION

UNIT 2

INSERVICE TESTING PROGRAM PLAN

FOR PUMPS AND VALVES

FIFTH TESTING INTERVAL

MAY 10, 2014 - MAY 09, 2024

REVISION 0

COMMERCIAL OPERATION: MAY 1, 1973

ADDRESSES:

VIRGINIA ELECTRIC AND POWER COMPANY P. O. BOX 26666 RICHMOND, VIRGINIA 23261

SURRY POWER STATION 5570 HOG ISLAND RD SURRY, VIRGINIA 23883

PLAN: U2 IST PROGRAM PLAN INTERVAL 5

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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 2 which received its construction permit on June 25, 1968 and began commercial operation on May 1, 1973. Surry Power Station Unit 2 is a Pressurized Water Reactor located in Surry County, Virginia. The plant employs a Westinghouse Electric Corp. Nuclear Steam System.

The IST Program Plan is comprised of two subprograms – the IST Program for Pumps and the IST Program for Valves. The development, implementation and administration of these programs are detailed in subsequent sections. This IST Program Plan applies to the fifth IST interval for Surry Power Station Unit 2 which starts on May 10, 2014 and ends May 9, 2024.

2.0 GENERAL PROGRAM DEVELOPMENT

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

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

The Code of Federal Regulations, paragraph 10CFR50.55a(b)(3) refers to the ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants, and includes the 2004 Edition, the 2005 Addenda and the 2006 Addenda. The Code reference became effective on July 1st, 2011 and applies to the fifth IST interval for Surry Unit 2. The IST Program for the fifth IST interval complies with these edition and addenda.

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

In accordance with ASME OM Code, Subsection ISTA-1100, Scope, the following are required to be included in the testing program:

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

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

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

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions including Generic Letter 89-04 and NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, Revision 1. Other than these guides, there is no specific guidance for developing the IST Program scope of testing. Therefore, a set of rules was established by which the scope of the Surry ASME IST Program is determined including components that are to be included and the extent and type of testing required for each. Based on these rules, the philosophy and assumptions used in determining the test requirements for selected pumps and valves were documented.

2.1 PROGRAM SCOPE

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

Final Safety Analysis Report (FSAR),

Technical Specifications,

USNRC Regulatory Guide 1.26

Past program correspondence,

Operating Procedures (normal, emergency and abnormal) and Plant System Descriptions.

The sequence followed during the development effort was as follows:

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

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

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

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

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

2.2 PROGRAM UPDATE

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

1) plant design changes,

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

3) changes in accident mitigating procedures philosophy and

4) later editions and addenda to the ASME OM Code.

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

2.3 Program Relief Requests

The relief requests in this section apply to the general administration of the IST Program.

RELIEF REQUEST G-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(ii), Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety. Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

All Pumps and Valves contained within the Inservice Testing Program scope

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

Code Paragraph	Description
ISTA-3120(a)	"The frequency for the inservice testing shall be in
	accordance with the requirements of Section
	1ST."
ISTB-3400	Frequency of Inservice Tests
Table ISTB-3400-1	Inservice Test Frequency
ISTC-3510	Exercising Test Frequency
ISTC-3540	Manual Valves
ISTC-3630(a)	Frequency
ISTC-3700	Position Verification Testing
ISTC-5221 (c)(3)	"At least one valve from each group shall be
	disassembled and examined at each refueling
	outage; all valves in a group shall be
	disassembled and examined at least once every 8
	years."
Appendix I, I-1320	Test Frequencies, Class 1 Pressure Relief Valves
Appendix I, I-1330	Test Frequencies, Class 1 Nonreclosing Pressure
· · · · · · · · · · · · · · · · · · ·	Relief Devices
Appendix I, I-1340	Test Frequencies - Class 1 Pressure Relief Valves
	that are used for Thermal Relief Application
Appendix I, I-1350	Test Frequencies - Class 2 and 3 Pressure Relief
	Valves
Appendix I, I-1360	Test Frequencies - Class 2 and 3 Nonreclosing
	Pressure Relief Devices
Appendix 1, I-1370	Test Frequencies - Class 2 and 3 Primary
l	Containment Vacuum Relief Valves

Code Paragraph	Description
Appendix I, I-1380	Test Frequencies - Class 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves
Appendix I, I-1390	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application
Appendix II, II-4000(a)(1)	Performance Improvement Activities Interval
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities Interval

4.0 <u>Reason for Request</u>

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section 1ST establishes the inservice test frequency for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in the Table 3.2 of NUREG 1482, Revision 1) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow for a less than or equal to 25% extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (TS 4.0.2). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies irrespective of allowances provided under TS Administrative Controls (i.e., TS 6.4.I, "Inservice Testing Program," invokes TS 4.0.2 for various OM Code frequencies).

The lack of a tolerance band on the ASME OM Code inservice test frequency restricts operational flexibility. There may be a conflict where a surveillance test could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after a plant condition or associated Limiting Condition for Operation (LCO) is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can be and should be performed.

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in TS 4.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

Thus, just as with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

5.0 Proposed Alternative and Bases for Use

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Code Case OMN-20 is included in the ASME OM Code, 2009 Edition and will be used as the alternative to the frequencies of the ASME OM Code.

The requirements of Code Case OMN-20 are described below.

ASME OM Division: 1 Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.)

- a. Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in the table below. The specified time period between tests may be reduced or extended as follows:
 - 1) For periods specified as less than 2 years, the period may be extended by up to 25% for any given test.
 - 2) For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
 - 3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) and other less than two year test frequencies not specified in the table below.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, *Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants,* as Subsection ISTD contains its own rules for period extensions.

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
x Years	x calendar years where 'x' is a whole number of years ≥ 2

 b. Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by ASME OM Code 2004 Edition, 2005 and 2006 Addenda, and earlier editions and addenda of ASME OM Code.

6.0 Duration of the Proposed Alternative

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The proposed alternative described in Relief Request G-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

The following relief request for another plant that is similar to Relief Request G-1 was approved by the NRC.

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Request Number RV-01 for Quad Cities Units 1 and 2 was approved by the NRC by letter dated 2/14/2013 (TAC Nos. ME7981 through ME7988, ME7990 through ME7995.)

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda
 - 2. Surry TS Paragraph 4.0.2
 - 3. Surry TS 6.4.I, Inservice Testing Program

3.0 PUMP INSERVICE TEST PROGRAM DESCRIPTION

3.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 2 Technical Specification 6.4.I describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 pumps. The Surry Unit 2 Inservice Testing (IST) Program for Pumps has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTB and Technical Specifications.

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

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

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

3.2 PROGRAM IMPLEMENTATION

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. The Surry Power Station Unit 2 IST Program provides a schedule for testing safety-grade pumps and is implemented as part of normal periodic surveillance testing.

Reference data are gathered during initial surveillance tests. With the ASME OM Code, these initial reference tests can be a preservice test as described in ISTB-3100 or the first inservice test as described in ISTB-3200. ISTB-3100 requires that at least five points along the pump curve be measured for pumps where the system resistance can be varied. ISTB-3200 refers to Group A tests, Group B tests and comprehensive tests. Group A tests apply to Group A pumps which are pumps that are

operated continuously or routinely during normal operation, cold shutdown, or refueling operations. Group B tests apply to Group B pumps which are pumps in standby systems that are not operated routinely except for testing. Comprehensive tests apply to both Group A and B pumps and require more accurate pressure instrumentation (0.5% versus 2% for the Group A and B tests), but are performed on a less frequent basis.

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

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

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

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

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

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

4) <u>Precautions</u>: 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) <u>Instructions</u>: The main body of a procedure should contain step by step instructions in the degree of detail necessary for performing a required test.

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

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

3.3 PROGRAM ADMINISTRATION

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

3.4 PUMP REFERENCE LIST

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

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

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

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

Description: These centrifugal pumps supply boric acid to the suction of the charging pumps for emergency boration. The boric acid transfer pumps operate at two constant speeds. The low speed is used when recirculating the contents of the boric acid storage tanks, and the high speed (approximately double the low speed) is used when the pumps discharge to the charging pump suction header during emergency boration events and blender operations. The tests are conducted with the pumps on high speed. The pumps operate routinely during normal operation and are defined as Group A pumps.

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

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

2-CC-P-2A	Charging Pump Cooling Water Pumps
2-CC-P-2B	Drawing: 11548-CBM-71B, Sheet 2

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

2-CH-P-1A	High Head Safety Injection/Charging Pumps
2-CH-P-1B	Drawing: 11548-CBM-88B, Sheet 2
2-CH-P-1C	-

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

2-CS-P-1A	Containment Spray Pumps
2-CS-P-1B	Drawing: 11548-CBM-84A, Sheet 2

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

2-FW-P-2	Auxiliary Feedwater Pumps
2-FW-P-3A	Drawing: 11548-CBM-68A, Sheet 3
2-FW-P-3B	-

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Description: These centrifugal pumps supply auxiliary feedwater to the steam generators following a loss of normal feedwater flow. The auxiliary feedwater pumps are in a standby system and are defined as Group B pumps. The steam driven pump 2-FW-P-2 is a variable speed pump, and the motor driven pumps 2-FW-P-3A and 3B are constant speed pumps.

2-RH-P-1A	Residual Heat Removal Pumps
2-RH-P-1B	Drawing: 11548-CBM-87A, Sheet 1

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

2-RS-P-1A	Inside Recirculation Spray Pumps
2-RS-P-1B	Drawing: 11548-CBM-84B, Sheet 1

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

2-RS-P-2A	Outside Recirculation Spray Pumps
2-RS-P-2B	Drawing: 11548-CBM-84B, Sheet 2

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

2-SI-P-1A	Low Head Safety Injection Pumps
2-SI-P-1B	Drawing: 11548-CBM-89A, Sheet 1

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

2-SW-P-10A	Charging Pump Service Water Pumps
2-SW-P-10B	Drawing: 11548-CBM-71B, Sheet 1

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

3.5 PUMP INSERVICE TEST TABLE

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

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

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

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

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

3) <u>ASME Class</u> - 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.

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

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

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

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

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

7) <u>Test Type</u> - The required ISTB test quantities. Test types with "C_" as a prefix represent comprehensive tests that are conducted every 24 months. Test types without the prefix "C_" represent either Group A or B tests that are conducted every three months unless the test frequency has been deferred to cold shutdown or reactor refueling by a relief request. Examples of test type abbreviations are given below.

DEV_HEAD - developed pump head

DIFF_PRESSURE - differential pressure

DISCH_PRESSURE - discharge pressure

FLOW - flow

FLOW_TOTAL - flow total is the sum of branch flows

PUMP_SPEED - pump speed for variable speed pumps

VIB - vibration measured at a given bearing

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

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

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

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

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

9) Ref Flow Status – ISTB-3300 requires that the reference flow rate be within 20% of pump design flow. The reference flow rate is the flow rate used to establish acceptance criteria. For Group A and B tests, ISTB-3300(e)(2) allows for testing outside the 20% range due to impracticality. For comprehensive tests, ISTB-3300(e)(1) requires that the tests to be performed within the 20% range with no exceptions. Therefore, relief from Code provisions is required when testing outside the 20% range for comprehensive tests.

FULL (full flow) in this column indicates that the reference flow rate is within 20% of pump design flow. If the reference flow rate does not meet this requirement a note is provided at the end of the pump table with an explanation.

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

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

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PUMP	DRAWING	SHEET		ASME			ISERVIC	STING INTERVAL	- TEST	REF FLOW	RELIEF REQUEST	NON-CODE ALTER TEST
NUMBER	NUMBER	NO		CLASS			RESIST	TYPE	FREQ		(P-)	(PNC-)
1-CC-P-1C	11448-CBM-072D		B5	3 TRIFLIGA	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW_TOTAL C_VIB DIFF_PRESSURE FLOW_TOTAL VIB	24 24 24 03 03 03	FULL NOTE 1	5,6 5,6 1 6 6 1	
1-CC-P-1D	11448-CBM-072D	1 OF 5	A5	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW_TOTAL C_VIB DIFF_PRESSURE FLOW_TOTAL	24 24 24 03 03 03	FULL NOTE 1	5,6 5,6 1 6 6 1	
	COMPONENT COC	DLING WA	TER CEN	TRIFUGA	L PUMP			VIB	03			
1-CH-P-2C	11448-CBM-088A BORIC ACID TRAN			2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03 03	FULL	5 5 1 3 1	
1-CH-P-2D	11448-CBM-088A	1 OF 4	B4	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03	FULL	5 5 1 3	
	BORIC ACID TRAN	ISFER CEN	NTRIFUG	AL PUMP								
1-EE-P-1B	11448-FB-038A	2 OF 4	D7	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB DISCH_PRESSURE FLOW	NA 03 03 NA 03	FULL		1 1 1 1 1
	EMERGENCY DIES DISPLACEMENT P		RATOR F	UEL OIL .	TRANSF	ER POSITIV	E					

						• • • • • • • • •		STING INTERVA	L			
PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS	ISTB	FLOW	SYSTEM RESIST	E TEST TABLE TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
 1-EE-P-1E	11448-FB-038A	2 OF 4	C6	NC	В	NORMAL	FIXED	C_DISCH_PRESS C_FLOW C_VIB DISCH_PRESSURE	NA 03 03 NA	FULL		1 1 1 1
	EMERGENCY DIE		RATOR F	UEL OIL	TRANSF	ER POSITIV	E	FLOW	03	FULL		1
2-CC-P-2A	11548-CBM-071B	2 OF 2	C7	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE	24 24 24 24 03	FULL	5 5 1 4	
	COMPONENT CO	OLING WA	TER TO C	HARGIN	G PUMP	CENTRIFUC	GAL PUMP	FLOW VIB	03 03	FULL	1	
2-CC-P-2B	11548-CBM-071B	2 OF 2	C3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03	FULL	5 5 1 4	
	COMPONENT CO	DLING WA	TER TO C	HARGIN	g pump	CENTRIFUC	GAL PUMP	VID	00		I	
2-CH-P-1A	11548-CBM-088B	2 OF 3	C8	2	A	CAVITY	VARIABLE	C_DIFF_PRESS C_SUCTION_FLOW C_VIB	24 24 24	FULL	5 5 1	
						NORMAL	VARIABLE	UIFF_PRESSURE SUCTION_FLOW	03 03 03	NOTE 2	7 7 1	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIF	JGAL PUMP						

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SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL PUMP INSERVICE TEST TABLE

PUMP NUMBER	DRAWING NUMBER	SHEET NO	COOR	ASME CLASS	ISTB	FLOW	SYSTEM RESIST	E TEST TABLE TEST TYPE	TEST FREQ	REF FLOW STATUS	RELIEF REQUEST (P-)	NON-CODE ALTER TEST (PNC-)
2-CH-P-1B	11548-CBM-088B	2 OF 3	C6	2	A	CAVITY		C_DIFF_PRESS C_SUCTION_FLOW C_VIB	24 24 24 24	FULL	5 5 1	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIFL	NORMAL	VARIABLE	DIFF_PRESSURE SUCTION_FLOW VIB	03 03 03	NOTE 2	7 7 1	
2-CH-P-1C	11548-CBM-088B		C4	2		CAVITY	VARIABLE	C_DIFF_PRESS C_SUCTION_FLOW	24 24 24	FULL	5 5	
						NORMAL	VARIABLE	C_VIB DIFF_PRESSURE SUCTION_FLOW VIB	24 03 03 03	NOTE 2	7 7 1	
	HIGH HEAD SAFE	TY INJECT	ION/CHA	RGING C	ENTRIFL	JGAL PUMP						
2-CS-P-1A	11548-CBM-084A	2 OF 3	C6	2	В	RECIRC	FIXED	C_DIFF_PRESS C_TOTAL_FLOW C_VIB DIFF_PRESSURE TOTAL_FLOW	24 24 24 03 03			
	CONTAINMENT SP	PRAY PUM	P					-				
2-CS-P-1B	11548-CBM-084A	2 OF 3	B5	2	В	RECIRC	FIXED	C_DIFF_PRESS C_TOTAL_FLOW C_VIB DIFF_PRESSURE TOTAL_FLOW	24 24 24 03 03			
	T SPRAY PUMP											

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SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL

						PUMP I	NSERVIC	E TEST TABLE			RELIEF	NON-CODE
PUMP NUMBER	DRAWING NUMBER	SHEET NO		ASME CLASS	ISTB GROUF	FLOW PATH	SYSTEM RESIST	TEST TYPE	TEST FREQ	REF FLOW STATUS	REQUEST (P-)	ALTER TEST (PNC-)
2-FW-P-2	11548-CBM-068A	3 OF 4	B8	3	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_PUMP_SPEED C_VIB	24 24 24 24	FULL	5 5	
								DIFF_PRESSURE FLOW PUMP_SPEED	03 03 03	FULL		
					TRIFUGA	AL PUIVIP						
2-FW-P-3A	11548-CBM-068A	3 OF 4	B6	3	В	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB	24 24 24	FULL	5 5 1	
								DIFF_PRESSURE	03 03	FULL	,	
		VATER MC	TOR DR	VEN CEN	ITRIFUG	AL PUMP						
2-FW-P-3B	11548-CBM-068A	3 OF 4	B5	3	8	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE	24 24 24 03	FULL	5 5	
		WATER MC			ITRIFUG	AL PUMP		FLOW	03	FULL		
2-RH-P-1A	11548-CBM-087A	1 OF 2	D7	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW	24 24 24 CS CS	FULL	5 5 1 2 2	
	RESIDUAL HEAT I							VIB	cs	IOLL	1,2	
	RESIDUAL HEAT I											
2-RH-P-1B	11548-CBM-087A	1 OF 2	D4	2	A	RECIRC	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW	24 24 24 CS CS	FULL	5 5 1 2 2	
	RESIDUAL HEAT I	REMOVAL	PUMP					VIB	CS	FULL	2 1,2	

							001111					
					FIFT	I INSER	VICE TE	STING INTERV	AL			
								E TEST TABLE				
PUMP	DRAWING	SHEET		ASME	ISTB	FLOW	SYSTEM	TEST	TEST	REF FLOW	RELIEF REQUEST	NON-CODE ALTER TES
NUMBER	NUMBER	NO		CLASS			RESIST	TYPE	FREQ	STATUS	(P-)	(PNC-)
								•••••••••			(i =)	
2-RS-P-1A	11548-CBM-084B	1 OF 2	B5	2	в	RECIRC	VARIABLE	C_DIFF_PRESS	24		5	
								C_FLOW	24	FULL	5	
	INSIDE RECIRCUL							C_VIB	24			
		ATION SP	RAYVER		NE SHAF							
2-RS-P-1B	11548-CBM-084B	1 OF 2	B7	2	В	RECIRC	VARIABLE	C DIFF PRESS	24		5	
								C_FLOW	24	FULL	5	
								C_VIB	24			
	INSIDE RECIRCUL	ATION SP	RAY VER		NE SHAF	T PUMP						
2-RS-P-2A	11548-CBM-084B	2 OF 2	C6	2	В	RECIRC	FIXED	C_DIFF_PRESS	24		5	
								C_FLOW	24		5	
								C_VIB	24			
	OUTSIDE RECIRC	ULATION S	SPRAY V	ERTICAL	LINE SH	AFT PUMP						
2-RS-P-2B	11548-CBM-084B	2 OF 2	C7	2	В	RECIRC	FIXED	C_DIFF_PRESS	24		5	
								C_FLOW	24		5	
								C_VIB	24			
	OUTSIDE RECIRC	ULATION S	SPRAY VI	ERTICAL	LINE SH	AFT PUMP						
2-SI-P-1A	11548-CBM-089A	1 OF 3	C6	2	В	CAVITY	VARIABLE	C_DIFF_PRESS	24		5	
								C_FLOW	24	FULL	5	
								C_VIB	24			
						RECIRC	FIXED	DIFF_PRESSURE	03			
			<u></u>					FLOW	03	NOTE 3		
	LOW HEAD SAFET	Y INJECT	ON VER		IE SHAF							
2-SI-P-1B	11548-CBM-089A	1 OF 3	C4	2	В	CAVITY	VARIABLE	C_DIFF_PRESS	24		5	
								C_FLOW	24	FULL	5	
								C_VIB	24			
						RECIRC	FIXED	DIFF_PRESSURE	03			
								FLOW	03	NOTE 3		

SURRY UNIT 2

LOW HEAD SAFETY INJECTION VERTICAL LINE SHAFT PUMP

.

NON-CODE

(PNC-)

ALTER TEST

RELIEF

REQUEST

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(P-)

SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL PUMP INSERVICE TEST TABLE SHEET ASME ISTB FLOW SYSTEM TEST TEST REF FLOW TYPE COOR CLASS GROUP PATH RESIST FREQ STATUS NO NORMAL VARIABLE C_DIFF_PRESS 11548-CBM-071B 1 OF 2 B8 3 А 24

	SERVICE WATER	TO CHAR	GING PUMI	PCENTR	rifuga	L PUMP		C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 03 03 03	FULL	5 1 1		
2-SW-P-10B	11548-CBM-071B	1 OF 2	B3	3	A	NORMAL	VARIABLE	C_DIFF_PRESS C_FLOW C_VIB DIFF_PRESSURE FLOW VIB	24 24 24 03 03 03	FULL	5 5 1 1		
	SERVICE WATER	SERVICE WATER TO CHARGING PUMP CENTRIFUGAL PUMP											

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DRAWING

NUMBER

PUMP

NUMBER

2-SW-P-10A

PUMP INSERVICE TEST TABLE NOTES

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Note 1 - As described in Relief Request P-6, pumps 1-CC-P-1C and D are tested over a range of flows every three months. The lower end of this range is less than 20% of pump design flow. However, to minimize system perturbations, the range will not be changed to accommodate the 20% of design flow.

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

Note 3 - The low head safety injection recirculation flow path is the only flow path available for Group B tests that are performed every three months for pumps 2-SI-P-1A and B. Flow within 20% of pump design flow cannot be achieved with this flow path.

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3.6 PUMP TEST PROGRAM RELIEF REQUESTS

Relief Requests identify code requirements that are impractical for Surry Unit 2 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of the code requirements is proposed.

RELIEF REQUEST P-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i) Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-1.1

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3300, "Reference Values"

ISTB-3300(a) requires that initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, "Preservice Testing," or from the results of the first inservice test.

ISTB-3300(d) requires that reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.

ISTB-3300(f) requires that all subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ISTB-5120, "Inservice Testing" (Centrifugal Pumps, Except Vertical Line Shaft Centrifugal Pumps)

ISTB-5121(e) and ISTB-5123(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5121-1. For example, if vibration exceeds either 6Vr, or 0.7 in/sec, the pump is in the required action range.

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ISTB-5220, "Inservice Testing" (Vertical Line Shaft Centrifugal Pumps)

ISTB-5221(e) and ISTB-5223(e), "Group A Test Procedure and Comprehensive Test Procedure", require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5221-1 and corrective action taken as specified in ISTB-6200. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5221-1.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 Reason for Request

The pumps listed in Table P-1.1 tend to be smooth running pumps. Each pump listed in Table P-1.1 has at least one vibration reference value (V_r) that is currently less than 0.05 inches per second (ips). Small values for V_r produce small acceptable ranges for pump operation. The acceptable ranges are defined in Tables ISTB-5121-1 and ISTB-5221-1 as less than or equal to 2.5V_r. Based on a small acceptable range, a smooth running pump could be subject to unnecessary corrective action if the measured vibration parameter exceeds this acceptable range.

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

To avoid unnecessary corrective action, a minimum value for V_r of 0.05 ips has been established for velocity measurements. This minimum value will be applied to individual vibration locations for the pumps listed in Table P-1.1 where the measured reference value is less than 0.05 ips.

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

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

- vibration monitoring and analysis beyond that required by ISTB,
- oil sampling and analysis where applicable (e.g., for pumps with sufficiently large oil reservoirs).

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

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

It should be noted that all of the pumps in the IST Program will remain in the Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 provides an acceptable level of quality and safety.

5.0 <u>Proposed Alternative and Basis for Use</u>

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For the pumps listed in Table P-1.1, if a measured reference value is below 0.05 ips for a particular vibration measurement location, then subsequent test results for that location may be compared to an acceptable range based on 0.05 ips. In addition to the Code requirements, all pumps in the IST Program are included in and will remain in the Surry Predictive Maintenance Program regardless of their smooth running status.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-1 requests relief from the specific ISTB requirements identified in this request.

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to Relief Request P-1 were approved by the NRC.

Pump Relief Request P-1 for North Anna 2 was approved by the NRC by letter dated 11/15/2010 (TAC NOS. ME2776 and ME2777).

Pump Relief Request PRR8 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131).

Pump Relief Request PRR8 for Beaver Valley 2 was approved by the NRC by letter dated 2/14/2008 (TAC NOS. MD5595 – MD5604).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Table P-1.1

Pump		Code	OM			Pump Speed
Groups	System	Class	Group	Description	Pump Type	(rpm)
1-CC-P-1C 1-CC-P-1D	Component Cooling	3	A	Component Cooling Water Pumps	Centrifugal	1185
1-CH-P-2C 1-CH-P-2D	Chemical and Volume Control	2	A	Boric Acid Transfer Pumps	Centrifugal	3500
2-CC-P-2A 2-CC-P-2B	Component Cooling	3	A	Component Cooling Water Pump to Charging Pump	Centrifugal	3500
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Chemical and Volume Control/Safety Injection	2	A	High Head Safety Injection/Charging Pump	Centrifugal	6018
2-FW-P-3A	Auxiliary Feedwater	3	В	Auxiliary Feedwater Motor Driven Pump	Centrifugal	3560
2-RH-P-1A 2-RH-P-1B	Residual Heat Removal	2	A	Residual Heat Removal Pump	Centrifugal	1780
2-SW-P-10A 2-SW-P-10B	Service Water	3	A	Service Water Pump to Charging Pump	Centrifugal	3500

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RELIEF REQUEST P-2

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i) Code requirement is impractical. Alternative provides acceptable level of guality and safety.

Alternative provides acceptable level of quality and sale

1.0 ASME Code Components Affected

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

System: Residual Heat Removal

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-3400, "Frequency of Inservice Tests," states: "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

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

4.0 Reason for Request

ISTB-3400 and Table ISTB-3400-1

The residual heat removal (RHR) pumps are located inside containment. The pumps are low pressure (600 psig design pressure) pumps that take suction from and discharge to the reactor coolant system (RCS). The RCS is maintained at 2235 psig and the containment atmosphere is maintained at sub-atmospheric pressure during normal operation. The RHR motor operated suction and discharge isolation valves are interlocked with an output signal from RCS pressure transmitters which prevent the valves from being opened when the RCS pressure exceeds 460 psig. Therefore, testing the RHR pumps during normal operation is not possible.

5.0 Proposed Alternative and Bases for Use

ISTB-3400 and Table ISTB-3400-1

These pumps will be tested every cold shutdown outage and reactor refueling outage, unless the pump has been tested within the previous three months. (During back-to-back cold shutdown or refueling outages, the test period remains valid for three months following each test, and no additional periodic testing needs to be performed within this three month test period.) For a cold shutdown or reactor refueling that extends longer than three months, the pumps will be tested every three months in accordance with ISTB 3400-1.

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-2 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC4251 and MC4252)" dated September 28, 2004.

The following relief requests for other plants that are similar to Relief Request P-2 were approved by the NRC.

Pump Relief Request P-2 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR7 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131) and applies to ISTB-3400 and Table ISTB-3400-1.

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-3

Proposed alternative in accordance with 50.55a(f)(6)(i) and 10CFR50.55a(a)(3)(i) Code requirement is impractical.

Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Pump(s): 1-CH-P-2C 1-CH-P-2D

System: Chemical and Volume Control

Group: A

Class: 2

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 Reason for Request

Table ISTB-3500-1

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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.

ISTB-3510(b)(1)

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

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

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

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

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

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

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5.0 Proposed Alternative and Bases for Use

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

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

6.0 <u>Duration of the Proposed Alternative</u>

The proposed alternative described in Relief Request P-3 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief requests for other plants that are similar to portions of P-3 were approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441). Note that Relief Request PRR-03 only applies to the full scale range requirements in ISTB-3510(b)(1), and not to the instrument accuracy requirements in Table ISTB-3500-1.

Pump Relief Request PRR006 for Fermi 2 was approved by the NRC by letter dated 76/2010 (TAC NOS. ME2548, ME2549, ME2551) and applies to Table ISTB-3510-1.

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-4

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

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System: Component Cooling Water

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

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

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

5.0 Proposed Alternative and Bases for Use

Inlet pressure for the Group A tests will be measured with gauges that have a full-scale of 0 to 3.5 psig.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-4 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to portions of P-4 was approved by the NRC.

Pump Relief Request PRR-03 for Brunswick Steam Electric Plant, Unit 1 and 2 was approved by the NRC by letter dated May 8, 2008 (TAC NOS. MD7425 through MD7438, and MD 7440 and MD7441).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

RELIEF REQUEST P-5

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Refer to Table P-5.1

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTB-5123, "Comprehensive Test Procedure" refers to Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

ISTB-5223, "Comprehensive Test Procedure" refers to Table ISTB-5221-1, "Vertical Line Shaft Centrifugal Pump Test Acceptance Criteria" that requires an upper required action limit of $1.03Q_r$ and $1.03DP_r$ where Q_r is the reference flow rate and DP_r is the reference differential pressure.

Note: There are no ASME Code Classed positive displacement pumps in the Surry IST Program.

4.0 <u>Reason for Request</u>

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For some pump tests, Surry Power Station has had difficulty implementing the upper required action range limit of 1.03% above the established hydraulic parameter reference value for the comprehensive pump test. The difficulty arises when normal data scatter yields (1) a low measured reference value, and (2) high measured values for subsequent inservice tests. In these cases, some of the test data trend high near the upper required action range limit and may exceed the upper limit on occasion. The problem can be more severe for pumps with low differential pressures (50 psid or less) due to the smaller acceptable range.

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5.0 Proposed Alternative and Basis for Use

For the pumps listed in Table P-5.1, an upper required action limit of 1.06% times the reference value will be applied to the comprehensive pump test in accordance with ASME OM Code Case OMN-19, Alternative Upper Limit for the Comprehensive Pump Test. Also, for pumps that have a design basis accident flow rate, a pump periodic verification (PPV) test will be performed. Table P-5.1 identifies the pumps that have a design basis accident flow rate and indicates that a pump periodic verification test will be performed for these pumps.

Table P-5.1 includes all of the ASME Code Class pumps in the Surry IST program except for the containment spray (CS) pumps. The design basis accident flow rate cannot be achieved for the CS pumps with the existing test loop configuration. Therefore, the upper limit of 1.03% times the reference value will still be applied to the comprehensive pump test for the CS pumps. The reason the remaining pumps are included in the relief request is that data scatter can affect future tests for any of these pumps.

The following requirements shall be applied to the PPV test.

- 1) Apply the PPV test to pumps with a design basis accident flow rate as identified in Table P-5.1.
- 2) Performed the PPV test at least once every 2 years.
- 3) Determine if a PPV test is required before declaring a pump operable following replacement, repair, or maintenance on the pump.
- 4) Declared the pump inoperable if the PPV test flow rate and associated differential pressure cannot be achieved.
- 5) Maintain the necessary records for PPV test, including the applicable test parameters (e.g., flow rate and the associated differential pressure and speed for variable speed pumps) and their basis.
- 6) Account for the PPV test instrument accuracies in the test acceptance criteria.

Using the provisions of this relief request as an alternative to the specific requirements of ISTB-5123 and ISTB-5223, and Table ISTB-5121-1 and Table ISTB-5221-1 as described above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. Therefore, pursuant to 10CFR50.55a(a)(3)(i), Relief Request P-5 requests relief from the specific ISTB requirements identified in this request.

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RELIEF REQUEST P-5 (Cont.)

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-5 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 <u>Precedents</u>

None

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

Table P-5.1

Pump Groups	System	Code Class	Description	Pump Type	Design Basis Accident Flow Rate (gpm)	Pump Periodic Verification Test Required
1-CC-P-1C 1-CC-P-1D	Component Cooling	3	Component Cooling Water Pumps	Centrifugal	None	No
1-CH-P-2C 1-CH-P-2D	Chemical and Volume Control	2	Boric Acid Transfer Pumps	Centrifugal	None	No
2-CC-P-2A 2-CC-P-2B	Component Cooling	3	Component Cooling Water Pump to Charging Pump	Centrifugal	30	Yes
2-CH-P-1A 2-CH-P-1B 2-CH-P-1C	Chemical and Volume Control/Safety Injection	2	High Head Safety Injection/Charging Pump	Centrifugal	436	Yes
2-FW-P-2	Auxiliary Feedwater	3	Auxiliary Feedwater Turbine Driven Pump	Centrifugal	400	Yes
2-FW-P-3A 2-FW-P-3B	Auxiliary Feedwater	3	Auxiliary Feedwater Motor Driven Pump	Centrifugal	300	Yes
2-RH-P-1A 2-RH-P-1B	Residual Heat Removal	2	Residual Heat Removal Pump	Centrifugal	None	No
2-RS-P-1A 2-RS-P-1B	Recirculation Spray	3	Inside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	3100	Yes
2-RS-P-2A 2-RS-P-2B	Recirculation Spray	3	Outside Containment Recirculation Spray Pump	Vertical Line Shaft Centrifugal	2900	Yes
2-SI-P-1A 2-SI-P-1B	Safety Injection	3	Low Head Safety Injection Pump	Vertical Line Shaft Centrifugal	2901	Yes

Table P-5.1 (Cont.)

Pump		Code			Design Basis Accident Flow	Pump Periodic Verification Test
Groups	System	Class	Description	Pump Type	Rate (gpm)	Required
2-SW-P-10A 2-SW-P-10B	Service Water	3	Service Water Pump to Charging Pump	Centrifugal	42	Yes

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RELIEF REQUEST P-6

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Pump(s): 1-CC-P-1C 1-CC-P-1D

System: Component Cooling

Group: A

Class: 3

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

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

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

4.0 <u>Reason for Request</u>

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.

5.0 Proposed Alternative and Bases for Use

The component cooling water pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-6 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-6 will no longer be necessary.

7.0 Precedents

A similar relief request was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

Pump Relief Request P-4 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

These relief requests are similar to P-6 in that they use a portion of the pump curve instead of a reference point. However, the plant systems and conditions for not using a reference point differ.

8.0 <u>References</u>

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1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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RELIEF REQUEST P-7

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i). Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

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

System: Chemical and Volume Control

Group: A

Class: 2

Function: These centrifugal pumps supply high pressure borated water to the reactor coolant system following a safety injection signal, and to provide normal charging to the reactor coolant system.

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

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

4.0 Reason for Request

Plant conditions may not be the same as when the reference values were established when performing the quarterly Group A tests. In the Chemical and Volume Control System, charging system flow must be balanced with seal injection, letdown and seal return flows to maintain a constant pressurizer level and pressure. Adjusting the charging flow rate to a specific reference test flow rate and then returning the charging system to the original flow rate places an unnecessary transient on the charging system and causes undesirable perturbations within the Reactor Coolant System.

Therefore, pumps will be tested in a range of flows and the results will be compared to acceptance criteria based a portion of the pump curve and the hydraulic acceptance criteria given in ISTB.

Past vibration data for the subject pumps have been reviewed and it has been determined that pump vibration does not vary significantly with flow rate over the range of the test flow rates. This alternative to the requirements of ISTB-5121 provides an acceptable level of quality and safety.

5.0 Proposed Alternative and Bases for Use

The charging/safety Injection pumps will be tested in a range of flows, and the results will be compared to acceptance criteria based on a portion of the pump curve and the hydraulic acceptance criteria given in ISTB. The guidelines set forth in Code Case OMN-16, "Use of a Pump Curve for Testing" will be followed.

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

6.0 Duration of the Proposed Alternative

The proposed alternative described in Relief Request P-7 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval until Code Case OMN-16 is approved for use by the NRC in Regulatory Guide 1.192, Operation and Maintenance Code Case Acceptability. When OMN-16 is approved by the NRC, OMN-16 can be used without a relief request and Relief Request P-7 will no longer be necessary.

7.0 <u>Precedents</u>

The following relief requests for other plants that are similar to P-7 were approved by the NRC.

Pump Relief Request P-8 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

Pump Relief Request PRR3 for Beaver Valley 1 was approved by the NRC by letter dated 9/27/2007 (TAC NOS. MD5118 – MD5131). PRR3 references NUREG-1482, Section 5.2.2, "Reference Curves.," which gives guidance based on OMN-9 and the conditions in Regulatory Guide 1.192. OMN-16 incorporates the conditions identified in Regulatory Guide 1.192.

- 8.0 <u>References</u>
 - 1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

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.

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NON-CODE ALTERNATIVE TESTING PNC-1

System : Fuel Oil

Pump(s): 1-EE-P-1B 1-EE-P-1E

Group: B

Class: NC

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

ISTB Code Requirements Which Will Not Be Met

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

ISTB-3310 requires that after maintenance, repair, or pump replacement either a Group A or Comprehensive Test shall be run. If there is a deviation from previous reference value, this test will be used to set new reference criteria.

Table ISTB-3400-1 requires that a comprehensive test be run biennially.

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

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

Basis for Alternate Testing For ISTB-3300

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

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

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

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

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

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

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

Basis for Alternate Testing For ISTB-3310

A Group B test with vibrations measurements will be used in lieu of the Group A or Comprehensive test after maintenance, repairs, or pump replacement. The basis for using the Group B test with vibration measurements in lieu of the Group A or Comprehensive test is given below.

Basis for Alternate Testing For Table ISTB-3400-1

For positive displacement pumps, the comprehensive test acceptable range for flow rate is 0.95 to 1.03 times the reference value as described in Table ISTB-5321-1. The flow rate reference valves (Q_r) for the fuel oil transfer pumps are typically between 9 and 10 gpm, which translates to total acceptable bands from 0.72 gpm (for $Q_r = 9$ gpm) to 0.8 gpm (for $Q_r = 10$ gpm). A review of test data shows that seasonal variations in

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

recorded flow rates either come close to or exceed the acceptable bands allowed by the Code. The Group A test acceptable range for flow rate is 0.95 to 1.1 times the reference value as described in Table ISTB-5321-1. Although this range bounds the seasonal variations, there is little margin on the low end of the band.

The Group B test acceptable range for flow rate is 0.9 to 1.1 times the reference value as described in Table ISTB-5321-1. This acceptable range translates to total acceptable bands from 1.8 gpm (for Qr = 9 gpm) to 2.0 gpm (for Qr = 10 gpm). These acceptable bands bound the seasonal variations in recorded flow rates. It should be noted that the pumps are tested every quarter at a flow rate that satisfies the comprehensive test requirements for flow rate.

Applying the comprehensive test or Group A acceptance criteria to the fuel oil transfer pumps could result in pumps failing the test and being declared inoperable, when in fact the pumps are operating acceptably. The pumps are required to deliver 3.42 gpm but were designed for a flow rate of 5 gpm of fuel oil. As described above, the pumps deliver from 9 to 10 gpm, so there is a wide margin of over capacity for the fuel oil transfer pumps.

The Group B test differs from the Group A and Comprehensive test in that it does not require discharge pressure to be compared to acceptance criteria. The Group A test has an acceptable range of 0.93 to 1.10 times the reference discharge pressure and the Comprehensive test has a range of 0.95 to 1.03 times the reference for discharge pressure. The acceptable range for discharge pressure for a comprehensive test would be 0.88 psi (P_r =11psi). As positive displacement pumps, the flow rate is almost constant over the range of discharge pressures, giving an almost vertical line for the pump curve. System engineering has determined that flow, not discharge pressure is the critical attribute for validating the design function of these pumps and is the only hydraulic parameter that needs to be measured to detect pump degradation. Therefore, the Group B hydraulic acceptance criteria, which exclude discharge pressure, will be used.

The Group B test does not require vibration data. However, to enhance the ability to detect degradation, vibration measurements will be taken in accordance with the requirements of Table 5321-1 for the Comprehensive test during the quarterly Group B test.

Given, the wide margin of over capacity for the fuel oil pumps, and the inclusion of vibration testing, the Group B test is adequate for detecting degradation in the positive displacement fuel oil transfer pumps in lieu of the comprehensive test. This program change was initiated by discussions with System Engineering and Margin Management Issue EE03.

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

Basis for Alternate Testing For ISTB-3510(e)

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

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

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

Alternate Testing

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

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

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

The Group B test with Comprehensive test vibration criteria will be used for the quarterly Group B test, tests after maintenance, repairs, or pump replacement, and the Comprehensive test.

4.0 VALVE INSERVICE TEST PROGRAM DESCRIPTION

4.1 PROGRAM DEVELOPMENT PHILOSOPHY

Surry Unit 2 Technical Specification 6.4.I describes the surveillance requirements that apply to the inservice testing of ASME Code Class 1, 2 and 3 valves. The Surry Unit 2 Inservice Testing (IST) Program for Valves has been established to meet the requirements of 10CFR50, the ASME OM Code, Subsection ISTC and Technical Specifications.

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

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

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

Surry Unit 2 is committed to meeting the leak rate testing requirements of:

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

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

4.2 PROGRAM IMPLEMENTATION

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

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

The Exercise Tests verify that:

1) the valve strokes properly,

2) the valve responds to control commands,

3) the valve stroke time is within specific limits and

4) remote position indication accurately reflects the observed valve position. Remote valve position indication will be verified every two years.

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 ISTC-3521(g) which states that:

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

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

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

To test check valves to the full open position, the maximum required accident condition flow must be measured through the valve. In certain cases, this flow cannot be practically established or verified. Per ISTC-5221(c), disassembly and examination of the check valves on a sampling basis is an acceptable alternative testing method.

As allowed by ISTC-5222, "Condition-Monitoring Program," Surry Power Station will apply Appendix II, "Check Valve Condition Monitoring Program," of the ASME OM Code, Subsection ISTC as an alternative to the requirements of ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550 and ISTC-5221, subject to the following provisions and limitations.

4.3 PROGRAM ADMINISTRATION

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

4.4 VALVE INSERVICE TEST TABLE

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

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

- 1) <u>Valve Number</u> Each valve in the plant has a unique "mark" number which identifies the system to which the equipment belongs and type of equipment.
- Drawing and Sheet Number, Coordinate The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagrams provided.
- 3) <u>Valve Type</u> 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 OperatedAO - Pneumatic (Air Operated)MAN - Manually OperatedSO - Electronic solenoid Operated Valves

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

: ب 5) <u>Code Class</u> - ASME Code Class of each valve as per 10 CFR 50.55a and Regulatory Guide 1.26.

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

- 6) <u>Category</u> Categories are defined by ISTC-1300. Each valve has specific testing requirements which are determined by the category to which it belongs. Valves marked with an "E" are passive valves.
- Isclation Valve Type Valves that are assigned a maximum leakage. The following abbreviations are used to describe the main isolation valve types:

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

PIV - Pressure Isolation Valve 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.

8) <u>Test Required</u> - Testing requirements identified for the valves are identified here.

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

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

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

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

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

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

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

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

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

- 10) <u>Test Frequency</u> The following abbreviations are used to describe the test frequency:
 - 03 Nominally every three months
 - 24 Every 24 months
 - 60 Every 60 months
 - 120 Every 120 months

CM - Per the test frequency determined by the Appendix II, Check Valve Condition Monitoring program

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

RR - Every reactor refueling outage

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

- 11) <u>Relief Request Reference</u>
- 12) Cold Shutdown Justification Reference
- 13) <u>Reactor Refueling Justification Reference</u>

14) <u>Non-Code Alternative Test Reference</u>

15) <u>Function</u> - A brief description of the function of the valve.

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-BD-TV-200A	11548-CBM-124A	1 OF 4	C-7	AO GATE	2	2	B	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11		
	"A" STEAM GENEF VALVE	RATOR BL	OWDOW	N, INSIDE COI	NTAINME	ENT ISOL	ATION							
2-BD-TV-200B	11548-CBM-124A			AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11		
	"A" STEAM GENEF VALVE	RATOR BL	OWDOW	N, OUTSIDE C	ONTAIN	MENT IS	OLATION							
2-BD-TV-200C	11548-CBM-124A	2 OF 4	C-7	AO GATE	2	2	В	EV FS ST VP	C C C C OC	CS CS CS 24		11 11 11		
	"B" STEAM GENEF VALVE	RATOR BL	OWDOW	N, INSIDE COI	NTAINME	ENT ISOL	ATION	۷۳	00	24				
2-BD-TV-200D	11548-CBM-124A	2 OF 4	C-6	AO GATE	2	2	B	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11		
·	"B" STEAM GENEF VALVE	RATOR BL	OWDOW	N, OUTSIDE C	ONTAIN	MENT IS	OLATION	۷r	00	24				
2-BD-TV-200E	11548-CBM-124A	3 OF 4	C-7	AO GATE	2	2	В	EV FS ST VP	C C C OC	CS CS CS 24		11 11 11 11		
	"C" STEAM GENER VALVE	RATOR BL	LOWDOW	N, INSIDE CO	NTAINMI	ENT ISOL	ATION	VP	00	24				
2-BD-TV-200F	11548-CBM-124A	3 OF 4	C-6	AO GATE	2	2	В	EV FS ST	C C C	CS CS CS		11 11 11		

VALVE NUMBER	DRAWING NUMBER		COOR	VALVE TYPE	SIZE	CLASS	ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-BD-TV-200F	11548-CBM-124A "C" STEAM GENEF VALVE	3 OF 4	C-6	AO GATE	2	2	B OLATION	VP	OC	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET CO	VALVE POR TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
1-CC-569	11448-CBM-072D	1 OF 5 B-	5 CHECK VALV	'E 18	3	С	CV	c	CM				
	"D" COMPONENT	COOLING PU	MP DISCHARGE CI	HECK VA	LVE			0	СМ				
1-CC-578	11448-CBM-072D	1 OF 5 B-	5 CHECK VALV	′E 18	3	С	CV	C O	CM CM				
	"C" COMPONENT	COOLING PU	MP DISCHARGE CH	HECK VA	LVE			0	CIVI				
2-CC-001	11548-CBM-072A	2 OF 7 F-	7 CHECK VALV	Έ6	3	С	cv	C O	CM				
	CC SUPPLY TO "A COOLERS, ISOL C		O, STATOR SHROL	JD & THE	RM BAR	RIER		0	СМ				
2-CC-058	11548-CBM-072A	3 OF 7 F-	7 CHECK VALV	Έ6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "E COOLERS, ISOL C		D, STATOR SHROL	JD & THE	RM BAR	RIER		0	CIVI				
2-CC-059	11548-CBM-072A	4 OF 7 F-	7 CHECK VALV	Έ 6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "C COOLERS, ISOL C		O, STATOR SHROL	JD & THE	RM BAR	RIER		0	Civi				
2-CC-094	11548-CBM-072A	2 OF 7 C-	6 CHECK VALV	Έ2	3	С	CV	c	CM				
:	COMPONENT CO CHECK VALVE		R TO RCP THERMA	L BARRI	ER ISOLA	ATION		0	СМ				
2-CC-095	11548-CBM-072A	3 OF 7 C-	6 CHECK VALV	Έ2	3	С	CV	C O	CM CM				
	COMPONENT CO CHECK VALVE		R TO RCP THERMA	L BARRI	ER ISOLA	ATION		0	Civi				
2-CC-176	11548-CBM-072A	1 OF 7 F-	7 CHECK VALV	Έ 18	3	С	cv	c	CM				*****
	CC SUPPLY TO R	HR HEAT EXC	HANGER CHECK \	/ALVE				0	CM				
2-CC-177	11548-CBM-072A	1 OF 7 F-	7 CHECK VALV	Έ 18	3	С	CV	С	СМ				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-177	11548-CBM-072A CC SUPPLY TO RH			CHECK VALVE IGER CHECK VA		3	С	CV	0	СМ				······································
2-CC-181	11548-CBM-072A	1 OF 7	E-2	MANUAL BFLY	18	3	В	EV	C O	24 24				
	CC RETURN FROM	/ RHR HE	AT EXC	HANGER MANU/	AL ISOL	ATION V	ALVE							
2-CC-185	11548-CBM-072A	1 OF 7	C-2	MANUAL BFLY	18	3	В	EV	C O	24 24				
	CC RETURN FROM	/ RHR HE	AT EXC	HANGER MANUA	AL ISOL	ATION V	ALVE							
2-CC-224	11548-CBM-072B	1 OF 3	D-2	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "C ISOLATION CHEC		AIR CO	OLING COILS, IN	ISIDE C	ONTAIN	MENT							
2-CC-233	11548-CBM-072B	1 OF 3	D-6	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "B ISOLATION CHEC		AIR CO	OLING COILS, IN	ISIDE C	ONTAINI	MENT							
2-CC-242	11548-CBM-072B	1 OF 3	D-8	CHECK VALVE	6	3	С	CV	C O	CM CM				
	CC SUPPLY TO "A ISOLATION CHEC		AIR CO	OLING COILS, IN	ISIDE C	ONTAINI	MENT							
2-CC-329	11548-CBM-071B	2 OF 2	D-3	CHECK VALVE	2	3	С	CV	C O	CM CM				
	CHARGING PUMP	COOLING	WATE	R PUMP DISCHA	RGE CH	IECK VA	LVE		Ŭ	0111				
2-CC-555	11548-CBM-072A	2 OF 7	C-6	CHECK VALVE	2	3	С	CV	C O	CM CM				
	COMPONENT COC CHECK VALVE	DLING WA	TER TO	RCP THERMAL	Barrie	ER ISOLA	TION		U U	0.111				
2-CC-556	11548-CBM-072A	3 OF 7	C-6	CHECK VALVE	2	3	C	CV	C O	CM CM				

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			VAL		SERV	ICE		IADLI						
DRAWING NUMBER	SHEET	COOR	VALVE TYPE				VALVE	TEST TYPE			REL REQ V-	JUST	JUST	NC ALT TEST VNC-
COMPONENT CO CHECK VALVE	OLING WA	TER TO) RCP THERMAL	BARRIE	ER ISOLA	ATION								
11548-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	С		CV	C O	CM CM				
COMPONENT CO CHECK VALVE	OLING WA	TER TC	RCP THERMAL	BARRIE	ER ISOLA	ATION			-					
11548-CBM-072A	4 OF 7	C-6	CHECK VALVE	2	3	С		CV	C O	CM				
COMPONENT CO CHECK VALVE	OLING WA	TER TC	RCP THERMAL	BARRIE	ER ISOLA				U	0				
11548-CBM-071B	2 OF 2	C-7	CHECK VALVE	2	3	С		CV	С	CM				
CHARGING PUMP	COOLING	WATE	R PUMP DISCHA	RGE CI	HECK VA	LVE			Ū	CIM				
11448-CBM-072E	1 OF 2	C-5	CHECK VALVE	1	3	С		CV	C O	CM CM				
CHARGING PUMP	SEAL CO	OLING S	SURGE TANK MA	AKEUP (ALVE/			-					
11548-CBM-071B	2 OF 2	D-5 [.]	AO GATE	1	3	В	*****	EV	C O	CS CS		15 15		
								FS	č	CS		15		
								ST		NA	NOTE 1			
			SURGE TANK LE	VEL					0	NA	NOTE 1			
		• •			-	C ALVE		SP	0	120	NOTE 2			
						C ALVE		SP	0	120	NOTE 2			
						C ALVE		SP	0	120	NOTE 2			
	NUMBER COMPONENT COC CHECK VALVE 11548-CBM-072A COMPONENT COC CHECK VALVE 11548-CBM-072A COMPONENT COC CHECK VALVE 11548-CBM-071B CHARGING PUMP 11448-CBM-072E CHARGING PUMP 11548-CBM-072B REACTOR CONTA 11548-CBM-072B REACTOR CONTA 11548-CBM-072B	NUMBERSHEETCOMPONENT COOLING WA CHECK VALVE11548-CBM-072A4 OF 7COMPONENT COOLING WA CHECK VALVE11548-CBM-072A4 OF 7COMPONENT COOLING WA CHECK VALVE11548-CBM-072A4 OF 7COMPONENT COOLING WA CHECK VALVE11548-CBM-071B2 OF 2CHARGING PUMP COOLING11448-CBM-072E1 OF 2CHARGING PUMP SEAL CO11548-CBM-071B2 OF 2CHARGING PUMP SEAL CO11548-CBM-071B2 OF 2CHARGING PUMP SEAL CO11548-CBM-072B1 OF 3REACTOR CONTAINMENT A11548-CBM-072B1 OF 3	NUMBERSHEET COORCOMPONENT COOLING WATER TO CHECK VALVE11548-CBM-072A4 OF 7COMPONENT COOLING WATER TO CHECK VALVE11548-CBM-072A4 OF 7CHECK VALVE11548-CBM-072A4 OF 7COMPONENT COOLING WATER TO CHECK VALVECHECK VALVE11548-CBM-071B2 OF 2CHARGING PUMP COOLING WATER11448-CBM-072E1 OF 2CHARGING PUMP SEAL COOLING SEAL11548-CBM-071B2 OF 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GATE13CHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE10F 3C-7RELIEF VALVE0.75311548-CBM-072B1 OF 3C-7RELIEF VALVE0.7533REACTOR CONTAINMENT AIR RECIRCULATION COOLER RELIEF V11548-CBM-072B1 OF 3C-5RELIEF VALVE0.75311548-CBM-072B1 OF 3C-3RELIEF VALVE0.75311548-CBM-072B1 OF 3C-3RELIEF VALVE0.753</td><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASSCATCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23CCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23CCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23C11548-CBM-071B2 OF 2C-7CHECK VALVE13CC11448-CBM-072E1 OF 2C-5CHECK VALVE13C11548-CBM-072E1 OF 2D-5AO GATE13BCHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE11548-CBM-071B2 OF 2D-5AO GATE13BCHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CC11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-3RELIEF VALVE0.753C</td><td>ISO NUMBERISO SHEET COORVALVE TYPEVALVE VALVEASME SIZEISTC VALVE CLASSCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE4 OF 7C-6CHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23C11548-CBM-072A4 OF 7C-6CHECK VALVE23C11548-CBM-071B2 OF 2C-7CHECK VALVE23C11548-CBM-071B2 OF 2C-7CHECK VALVE23C11448-CBM-072E1 OF 2C-5CHECK VALVE13C11548-CBM-071B2 OF 2D-5AO GATE13BCHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE11548-CBM-071B2 OF 2D-5AO GATE13CCHARGING PUMP SEAL COOLING SURGE TANK LEVELCONTROL/ISOLATION VALVE13CC11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753C11548-CBM-072B1 OF 3C-5RELIEF VALVE0.75<td< td=""><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPECOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECOVCOVCOV11548-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE23CCV11548-CBM-072A CHECK VALVE2 OF 2C-7CHECK VALVE23CCV11548-CBM-071B 2 OF 22 OF 2C-7CHECK VALVE13CCV11548-CBM-071B 2 OF 21 OF 2C-5CHECK VALVE13CCV11548-CBM-071B 2 OF 2D-5AO GATE13BEVFS STCFS STSTCSPSP11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-3RELIEF VALV</td><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME LASS CLASS CAT TYPETEST TYPETYPETYPEPOSCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCOCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCOCHARGING PUMP COOLING WATER PUMP 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COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCCMCCCMCCCMCCCMCCC</br></td></td></td<></td></td></td<></td></t<>	DRAWING NUMBERSHEET COORVALVE TYPECOMPONENT COOLING WATER TO RCP THERMAL CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVECOMPONENT COOLING WATER TO RCP THERMAL CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVECOMPONENT COOLING WATER TO RCP THERMAL CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE11548-CBM-071B2 OF 2C-5CHECK VALVECHARGING PUMP COOLING WATER PUMP DISCHAR 11548-CBM-072E1 OF 2C-5CHECK VALVECHARGING PUMP SEAL COOLING SURGE TANK MAR11548-CBM-071B2 OF 2D-5AO GATECHARGING PUMP SEAL COOLING SURGE TANK LE CONTROL/ISOLATION VALVE11548-CBM-072B1 OF 3C-7CHARGING PUMP SEAL COOLING SURGE TANK LE CONTROL/ISOLATION 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VALVE0.753C11548-CBM-072B1 OF 3C-5RELIEF VALVE0.75 <td< td=""><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPECOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECOVCOVCOV11548-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE23CCV11548-CBM-072A CHECK VALVE2 OF 2C-7CHECK VALVE23CCV11548-CBM-071B 2 OF 22 OF 2C-7CHECK VALVE13CCV11548-CBM-071B 2 OF 21 OF 2C-5CHECK VALVE13CCV11548-CBM-071B 2 OF 2D-5AO GATE13BEVFS STCFS STSTCSPSP11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-3RELIEF VALV</td><td>DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME LASS CLASS CAT TYPETEST TYPETYPETYPEPOSCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCOCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCOCHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE13CCVCOOCHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE11548-CBM-071B2 OF 2D-5A O GATE13BEVCOCHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753C<!--</td--><td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSCAT TYPETEST TYPETEST TEST TEST TEST TEST TESTCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVC CCM CM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVC CCM C11548-CBM-071B2 OF 2D-5AO GATE13BEV CC C CCS C C C11548-CBM-071B2 OF 2D-5AO GATE13BEV CCCS C C C11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1</td><td>ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEVALVE CLASSCALVE TYPETEST TYPETEST TYPEREQ POSREQ V.COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVCCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS FSCCS STCNOTE 111548-CBM-071B2 OF 2D-5AO GATE13BEVCCS STCNOTE 111548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.75<td< td=""><td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVE SIZE CLASS CLASS CAT CAT CAT CALVEISO TEST TYPEREL TEST<br <="" td=""/><td>DRAWING NUMBERVALVE VALVEVALVE VALVEASME IST VALVE VLVE ASME IST VALVE SIZE CLASS CAT TYPETEST TYPETEST TYPETEST TYPEREL REQ V.CS CSVRRVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCCMCCCMCCCMCCCMCCC</br></td></td></td<></td></td></td<>	DRAWING NUMBERSHEET COORVALVE TYPEVALVE VALVESIZE SIZE CLASS CLASS CAT TYPETEST TYPECOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECOVCOVCOV11548-CBM-072A CHECK VALVE4 OF 7C-6CHECK VALVE23CCV11548-CBM-072A CHECK VALVE2 OF 2C-7CHECK VALVE23CCV11548-CBM-071B 2 OF 22 OF 2C-7CHECK VALVE13CCV11548-CBM-071B 2 OF 21 OF 2C-5CHECK VALVE13CCV11548-CBM-071B 2 OF 2D-5AO GATE13BEVFS STCFS STSTCSPSP11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-5RELIEF VALVE0.753CSP11548-CBM-072B1 OF 3C-3RELIEF VALV	DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE SIZEASME LASS CLASS CAT TYPETEST TYPETYPETYPEPOSCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCOCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCOCHARGING PUMP COOLING WATER PUMP DISCHARGE CHECK VALVE13CCVCOOCHARGING PUMP SEAL COOLING SURGE TANK MAKEUP CHECK VALVE11548-CBM-071B2 OF 2D-5A O GATE13BEVCOCHARGING PUMP SEAL COOLING SURGE TANK LEVEL CONTROL/ISOLATION VALVE11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753C </td <td>DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSCAT TYPETEST TYPETEST TEST TEST TEST TEST TESTCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVC CCM CM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVC CCM C11548-CBM-071B2 OF 2D-5AO GATE13BEV CC C CCS C C C11548-CBM-071B2 OF 2D-5AO GATE13BEV CCCS C C C11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1</td> <td>ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEVALVE CLASSCALVE TYPETEST TYPETEST TYPEREQ POSREQ V.COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVCCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS FSCCS STCNOTE 111548-CBM-071B2 OF 2D-5AO GATE13BEVCCS STCNOTE 111548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.75<td< td=""><td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVE SIZE CLASS CLASS CAT CAT CAT CALVEISO TEST TYPEREL TEST<br <="" td=""/><td>DRAWING NUMBERVALVE VALVEVALVE VALVEASME IST VALVE VLVE ASME IST VALVE SIZE CLASS CAT TYPETEST TYPETEST TYPETEST TYPEREL REQ V.CS CSVRRVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCCMCCCMCCCMCCCMCCC</br></td></td></td<></td>	DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZECLASS CLASSCAT TYPETEST TYPETEST TEST TEST TEST TEST TESTCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVC CCM CM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVC CCM CM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVC CCM C11548-CBM-071B2 OF 2D-5AO GATE13BEV CC C CCS C C C11548-CBM-071B2 OF 2D-5AO GATE13BEV CCCS C C C11548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO12011548-CBM-072B1	ISO DRAWING NUMBERSHEET COORVALVE TYPEVALVE SIZEVALVE CLASSCALVE TYPETEST TYPETEST TYPEREQ POSREQ V.COMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-072A4 OF 7C-6CHECK VALVE23CCVCCMCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVE23CCVCCM11548-CBM-071B2 OF 2C-7CHECK VALVE23CCVCCM11448-CBM-071B2 OF 2C-5CHECK VALVE13CCVCCM11448-CBM-071B2 OF 2D-5AO GATE13BEVCCS FSCCS STCNOTE 111548-CBM-071B2 OF 2D-5AO GATE13BEVCCS STCNOTE 111548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.753CSPO120NOTE 211548-CBM-072B1 OF 3C-7RELIEF VALVE0.75 <td< td=""><td>ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVE SIZE CLASS CLASS CAT CAT CAT CALVEISO TEST TYPEREL TEST<br <="" td=""/><td>DRAWING NUMBERVALVE VALVEVALVE VALVEASME IST VALVE VLVE ASME IST VALVE SIZE CLASS CAT TYPETEST TYPETEST TYPETEST TYPEREL REQ V.CS CSVRRVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCCMCCCMCCCMCCCMCCC</br></td></td></td<>	ISO DRAWING NUMBERVALVE SHEET COORVALVE TYPEVALVE VALVE VALVE SIZE CLASS CLASS CAT CAT CAT CALVEISO TEST TYPEREL TEST <td>DRAWING NUMBERVALVE VALVEVALVE VALVEASME IST VALVE VLVE ASME IST VALVE SIZE CLASS CAT TYPETEST TYPETEST TYPETEST TYPEREL REQ V.CS CSVRRVCOMPONENT COOLING WATER TO RCP THERMAL BARRIER ISOLATION CHECK VALVECVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCM11548-CBM-072A4 OF 7C-6CHECK VALVE 23CCVCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCMCCCMCCCMCCCMCCCMCCC</br></td>	DRAWING NUMBERVALVE VALVEVALVE VALVEASME IST VALVE

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VALVE NUMBER	DRAWING NUMBER	SHEET C	OOR			ASME CLASS	ISTC V	TEST TYPE			REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-RV-216A	11548-CBM-072A RCP THERMAL BA							 SP	0	120	NOTE 2			
2-CC-RV-216B	11548-CBM-072A RCP THERMAL BA					-	C /E	 SP	0	120	NOTE 2			
2-CC-RV-216C	11548-CBM-072A RCP THERMAL BA							 SP	0	120	NOTE 2			
2-CC-RV-219A	11548-CBM-072A "A" RHR HEAT EX						C	 SP	0	120	NOTE 2			
2-CC-RV-219B	11548-CBM-072A "B" RHR HEAT EX					3 F VALVE	-	 SP	0	120	NOTE 2			
2-CC-RV-224	11548-CBM-072A COMPONENT COO				0.75	3	С	 SP	0	120	NOTE 2			
2-CC-RV-238A	11548-CBM-072A REACTOR SHROU		-			3	С	 SP	0	120	NOTE 2			
2-CC-RV-238B	11548-CBM-072A REACTOR SHROU					3	С	 SP	0	120	NOTE 2			
2-CC-RV-238C	11548-CBM-072A REACTOR SHROL		-			3	С	 SP	0	120	NOTE 2			
2-CC-TV-205A	11548-CBM-072A	2 OF 7 E	B-4	AO BALL	6	3	В	 EV FS ST VP	C C C OC	CS CS CS 24		2 2 2		
	CC RETURN FROM OUTSIDE CONTAI			,	ROUD C	OOLERS	5,							
2-CC-TV-205B	11548-CBM-072A	3 OF 7 E	B-4	AO BALL	6	3	В	 EV FS ST	C C C	CS CS CS		2 2 2		

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CC-TV-205B	11548-CBM-072A CC RETURN FROM OUTSIDE CONTAI	/ "B" RC F	PUMP LO,		6 HROUD C	3 OOLERS	В 5,	VP	OC	24				
2-CC-TV-205C	11548-CBM-072A	4 OF 7	B-4	AO BALL	6	3	В	EV FS ST VP	C C C OC	CS CS CS 24		2 2 2		
	CC RETURN FROM OUTSIDE CONTAI				HROUD C	OOLERS	S,							
2-CC-TV-209A	11548-CBM-072A	1 OF 7	B-7	AO BFLY	18	3	В	EV FS ST VP	C O C C O O C	03 03 03 03 03 03				
	CC RETURN FROM		HEAT EX	CHANGER, C	OUTSIDE	CONTAI	MENT	٧P	UC	24				
2-CC-TV-209B	11548-CBM-072A	1 OF 7	C-7	AO BFLY	18	3	В	EV FS ST VP	С О С О ОС	03 03 03 03 03 03 24				
	CC RETURN FROM		HEAT EX	CHANGER, C	OUTSIDE	CONTAI	NMENT	VP	00	24				
2-CC-TV-210A	11548-CBM-072B	1 OF 3	E-7	AO BFLY	6	3	В	EV FS ST VP	C C C OC	03 03 03 24				
	CC RETURN FROM CONTAINMENT IS			OOLING COI	LS, OUTS	SIDE								
2-CC-TV-210B	11548-CBM-072B	1 OF 3	E-5	AO BFLY	6	3	В	EV FS	C C	03 03				

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SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

							ISO				REL	CS	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
2-CC-TV-210B	11548-CBM-072B	1 OF 3	E-5	AO BFLY	6	3	В	ST VP	C OC	03 24				
	CC RETURN FRO			COOLING COI	LS, OUTS	SIDE				-				
2-CC-TV-210C	11548-CBM-072B	1 OF 3	E-4	AO BFLY	6	3	В	EV FS	C C	 03 03				
								ST	Ċ	03				
	CC RETURN FROI CONTAINMENT IS			COOLING COI	LS, OUT	SIDE		VP	OC	24				
2-CC-TV-220A	11548-CBM-072A	2 OF 7	C-5	AO GATE	1.5	3	В	EV	C	CS		13		
								ST VP	с ос	CS 24		13		
	CC RETURN FROM		OR COOL	ANT PUMP TH	HERMAL	BARRIEF	र							
2-CC-TV-220B	11548-CBM-072A	3 OF 7	C-5	AO GATE	1.5	3	В	EV ST	C C	CS CS		13 13		
								VP	õc	24		15		
	CC RETURN FROM		OR COOL	ANT PUMP TH	HERMAL	BARRIEF	2							
2-CC-TV-220C	11548-CBM-072A	4 OF 7	C-5	AO GATE	1.5	3	В	EV ST	C C	CS CS		13 13		
								VP	õc	24		15		
	CC RETURN FROM		OR COOL	ANT PUMP TH	HERMAL	BARRIEF	र							
2-CC-TV-240A	11548-CBM-072A	1 OF 7	D-7	AO GLOBE	3	3	В	EV	С	CS		13	* * * * * * * * * * * *	
								FS ST	с с	CS CS		13 13		
								VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
······	CC RETURN FROM CONTAINMENT IS		P THERMAL BA	RRIERS	, INSIDE								
2-CC-TV-240B	11548-CBM-072A	1 OF 7 D-7	AO GLOBE	3	3	В	EV FS ST VP	C C C OC	CS CS CS 24		13 13 13		
	CC RETURN FROM OUTSIDE CONTAI	NMENT ISOLATIO	N VALVE			RS,							

							ISO				REL	CS	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
1-CH-109	11448-CBM-088A	1 OF 4	C-5	CHECK VALVE	2	2	С	CV	C O	CM CM				
,	"C" BORIC ACID T	RANSFER	PUMP (DISCHARGE CH	ECK VA	LVE			0	Civi				
1-CH-116	11448-CBM-088A	1 OF 4	C-4	CHECK VALVE	2	2	С	CV	c	CM				
	"D" BORIC ACID TI	RANSFER	PUMP (DISCHARGE CH	ECK VA	LVE			0	СМ				
2-CH-225	11548-CBM-088B	1 OF 2	D-3	CHECK VALVE	1	2	С	CV	c	CM				
	MANUAL EMERGE	NCY BOR	ATION F	PATH CHECK VA	LVE				0	СМ				
2-CH-227	11548-CBM-088B	1 OF 2	B-5	CHECK VALVE	2	2	С	CV	С	CM				
	MAIN EMERGENC VALVE	Y BORATIC	ON LINE	E TO CHARGING	PUMP	SUCTIO	N CHECK		0	СМ				
2-CH-228	11548-CBM-088B MANUAL EMERGE		-			2	В	EV	0	24				
2-CH-229	11548-CBM-088B	1 OF 2	B-4	CHECK VALVE	1	2	C	CV	C O	CM				
	MANUAL EMERGE	NCY BOR	ATION F	PATH CHECK VA	LVE				0	СМ				
2-CH-230	11548-CBM-088B	1 OF 3	C-6	CHECK VALVE	4	2	С	CV	С	CM				
	CHARGING PUMP CHECK VALVE	SUPPLY F	ROMV		OL TAN	K DISCH	ARGE		0	СМ				
2-CH-256	11548-CBM-088B	2 OF 2	D-7	CHECK VALVE	2	2	С	CV	С	CM				
	"A" CHARGING PU	IMP DISCH	ARGE I	RECIRC LINE CH	IECK V/	ALVE			0	СМ				
 2-CH-258	11548-CBM-088B	2 OF 2	D-7	CHECK VALVE	3	2	C	CV	C	CM				
	"A" CHARGING PU	MP DISCH	ARGE (CHECK VALVE					0	СМ				

SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-265	11548-CBM-088B	2 OF 2	D-6	CHECK VALVE	2	2	С	CV	C O	CM CM				
	"B" CHARGING PU	MP DISCI	HARGE	RECIRC LINE CH	IECK V/	ALVE								
2-CH-267	11548-CBM-088B	2 OF 2	D-6	CHECK VALVE	3	2	С	CV	C O	CM CM				
	"B" CHARGING PU	MP DISCH	HARGE	CHECK VALVE					-					
2-CH-274	11548-CBM-088B	2 OF 2	D-4	CHECK VALVE	2	2	С	cv	C O	CM CM				
	"C" CHARGING PU	IMP DISCI	HARGE	RECIRC LINE CH	IECK V	ALVE								
2-CH-276	11548-CBM-088B	2 OF 2	D-4	CHECK VALVE	3	2	С	CV	C O	CM CM				
	"C" CHARGING PU	MP DISCI	HARGE	CHECK VALVE					Ŭ	Civi				
2-CH-309	11548-CBM-088C	1 OF 2	D-4	CHECK VALVE	3	2	С	CV	C	CM CM				
	MAIN CHARGING	SUPPLY H	IEADER	CHECK VALVE					U	Civi				
2-CH-FCV-2113A	11548-CBM-088B	1 OF 2	C-3	AO GLOBE	1	2	В	EV FS	0	03 03				
								ST	õ	NA	NOTE 1			
	MANUAL EMERGE		RATION	PATH FLOW CON	NTROL	VALVE		VP	OC	24	·			
2-CH-FCV-2114A	11548-CBM-088B	1 OF 2	D-4	AO GLOBE	2	2	В	EV	c	03				
								FS ST	C C	03 NA	NOTE 1			
	PRIMARY GRADE VALVE	WATER S	UPPLY	TO BORIC ACID	BLEND	er Isolj	ATION	VP	OC	24				
2-CH-FCV-2160	11548-CBM-088C CHARGING FLOW	1 OF 2 CONTRO		AO GLOBE OOP FILL HEADE	2 R ISOLA	1 ATION VA	E	VP	OC	24				
2-CH-LCV-2460A	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	В	EV	С	CS		6		

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-LCV-2460A	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	В	FS ST VP	0 0 20	CS CS 24		6 6		
	NORMAL LETDOW	N TO REO	GENERA	TIVE HEAT EX	CHANGE	R ISOLA	TION	••						
2-CH-LCV-2460B	11548-CBM-088C	1 OF 2	F-7	AO GLOBE	2	1	В	EV	С	CS		6		
								FS ST	C C	CS CS		6		
								VP	oc	24		6		
	NORMAL LETDOW	N TO REC	GENERA	TIVE HEAT EX	CHANGE	R ISOLA	TION	VI	00	24				
2-CH-MOV-2115B	11548-CBM-088B	2 OF 2	 В-3	MO GATE		2	Α	EV	C	03				
								. –	0	03				
								LT	C	24	1			
								ST	C O	03 03				
								VP	õ	24				
	CHARGING PUMP STORAGE TANK	SUPPLY	ISOLATIO	ON VALVE FRO	M REFU	IELING W	IATER	•	00	2,				
2-CH-MOV-2115C	11548-CBM-088B	1 OF 2	C-6	MO GATE	4	2	В	EV	С	CS		4		
								ST	С	CS		4		
	CHARGING PUMP	SUPPLY	ISOLATIO		JME CO	NTROL T	ANK	VP	OC	24				
2-CH-MOV-2115D	 11548-CBM-088B	2 OF 2	 C-3	MO GATE		2	Α	EV	c	03				
									Ō	03				
								LT	С	24	1			
								ST	С	03				
								=	0	03				
	CHARGING PUMP STORAGE TANK	SUPPLY	ISOLATIO	ON VALVE FRO	M REFU	IELING W	/ ATER	VP	OC	24				
2-CH-MOV-2115E	11548-CBM-088B	1 OF 2	C-6	MO GATE	4	2	В	EV	С	CS		4		
								ST	С	CS		4		
								VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISC ISTC VAL CAT TYP	VE TI	EST YPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
	CHARGING PUMP	SUPPLY	SOLATIO	N VALVE FRO	M VOLU	ME CON	TROL							
2-CH-MOV-2267A	11548-CGM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FR	6 OM RWS	2 ST, VCT A	E ND LHSI		VP	OC	24			
2-CH-MOV-2267B	11548-CBM-088B LOW HEAD SI PUI		-	MO GATE PUMP SUCTIO	6 N ISOLA	2 TION VA	E LVE		VP	OC	24			
2-CH-MOV-2269A	11548-CBM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FR	6 OM RWS	2 ST, VCT A	E ND LHSI		VP	OC	24			
2-CH-MOV-2269B	11548-CBM-088B LOW HEAD SI PUI				6 N ISOLA	2 TION VA	_		VP	OC	24			
2-CH-MOV-2270A	11548-CBM-088B CHARGING PUMP PUMP			MO GATE ON VALVE FR	6 OM RWS	2 ST, VCT A	E ND LHSI		VP	OC	24			
2-CH-MOV-2270B	11548-CBM-088B LOW HEAD SI PUI			MO GATE PUMP SUCTIO	6 N ISOLA	2 TION VA	E LVE		VP	OC	24			
2-CH-MOV-2275A	11548-CBM-088B	2 OF 2	D-7	MO GATE	2	2	В		EV	С	03			
									ST	o c	03 03			
									•	Ō	03			
	"A" CHARGING PL		IUM RECI	RCULATION I	SOLATIC	N VALVE	E		VP	OC	24			
2-CH-MOV-2275B	11548-CBM-088B	2 OF 2	D-5	MO GATE	2	2	в		 EV	с	03			
		_								0	03			
									ST	C O	03 03			
									VP	õ	24			
	"B" CHARGING PU	MP MINIM	IUM RECI	RCULATION I	SOLATIC	ON VALVE	Ē							

SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

								 	_		DEI	~~	00	
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-MOV-2275C	11548-CBM-088B	2 OF 2	D-3	MO GATE	2	2	В	 EV	c	03				
								ST	o c	03 03				
								01	ŏ	03				• •
								VP	OC	24				
	"C" CHARGING PL		IUM REC	IRCULATION I	SOLATIO	ON VALV	E							
2-CH-MOV-2286A	11548-CBM-088B	2 OF 2	E-7	MO GATE	3	2	B	 EV	С	03				
								~-	0	03				
								ST	C O	03 03				
								VP	oc	24				
	CHARGING PUMP	MAIN DIS	CHARGE	E ISOLATION V	ALVE			••	•••					
 2-CH-MOV-2286B	11548-CBM-088B	2 OF 2	 E-6	MO GATE	3	2	в	 EV	С	03				
									0	03				
								ST	С	03				
								VP	0 00	03 24				
	CHARGING PUMP	MAIN DIS	CHARGE	E ISOLATION V	ALVE			VP	00	24				
2-CH-MOV-2286C	11548-CBM-088B	2 OF 2	F-4	MO GATE	3	2	. B	 EV	С	03				
		2012			Ū	-	-		ŏ	03				
								ST	С	03				
									0	03				
	CHARGING PUMP	MAIN DIS	CHARGE	E ISOLATION V	ALVE			VP	oc	24				
2-CH-MOV-2287A	11548-CBM-088B	2 OF 2	U-1	MO GATE	3	2	B	EV	C O	03 03				
								ST	c	03				
								0.	ŏ	03				
								VP	OC	24				
	CHARGING PUMP	MAIN DIS	CHARGE	E ISOLATION V	ALVE									
2-CH-MOV-2287B	11548-CBM-088B	2 OF 2	D-6	MO GATE	3	2	В	 EV	С	03				
									0	03				

4-20

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-MOV-2287B	11548-CBM-088B	2 OF 2	D-6	MO GATE	3	2	В	ST VP	C O OC	03 03 24				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	ALVE			VI	00	24				
2-CH-MOV-2287C	11548-CBM-088B	2 OF 2	D-4	MO GATE	3	2	В	EV	С	03				
								ST	o c	03 03				
								VP	0 00	03 24				
	CHARGING PUMP	MAIN DIS	CHARGE	ISOLATION V	ALVE									
2-CH-MOV-2289A	11548-CBM-088C	1 OF 2	B-4	MO GATE	3	2	В	EV	C	CS		7		
								ST VP	с ос	CS 24		7		
	MAIN CHARGING	HEADER	SOLATIO	N VALVE										
2-CH-MOV-2289B	11548-CBM-088C	1 OF 2	B-3	MO GATE	3	2	В	EV	С	CS		7		
								ST VP	с ос	CS 24		7		
•	MAIN CHARGING	HEADER	SOLATIO	N VALVE, OU	TSIDE CO	ONTAINN	IENT							
2-CH-MOV-2350	11548-CBM-088B	1 OF 2	B-5	MO GATE	2	2	В	EV	0	03		10		
								ST VP	0 00	03 24		10		
	EMERGENCY BOF	RATION TO	CHARG	ING PUMP SU	ICTION									
2-CH-MOV-2373	11548-CBM-088B	2 OF 3	E-7	MO GATE	3	2	В	EV	С	RR			4	
								ST VP	с ос	RR 24			4	
	CHARGING PUMP	RECIRCU	JLATION	HEADER ISOL	ATION V	ALVE								
2-CH-MOV-2381	11548-CBM-088B	1 OF 2	C-8	MO GATE	3	2	A CIV	EV	C	CS		5		
								LT ST	с с	OPB CS		5		
	REACTOR COOLA		SEAL MA					VP	OC	24				
	ISOLATION VALV				, 5510									

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CH-RV-2203	11548-CBM-088C LETDOWN RELIEF PRESSURIZER RE		VNSTRE	RELIEF VALVE AM OF REGEN I		2 DISCHAF	C RGE T	0	SP	0	120				
2-CH-RV-2382A	11548-CBM-088C REACTOR COOLA TO PRESSURIZER	NT PUMP	SEAL W	RELIEF VALVE ATER RELIEF V	_	-	C IARG	E	SP	0	120	·			
2-CH-RV-2382B	11548-CBM-088B SEAL WATER HEA VOLUME CONTRC	T EXCHA				2 HARGE T	-		SP	0	120				
2-CH-TV-2204A	11548-CBM-088C	1 OF 2	D-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C	CS CS OPB CS 24		6 6 6		
	LETDOWN CONTR VALVE	OL FROM	1 REGEN	I HX, INSIDE CO	NTAINN	IENT ISC	DLATI	ON	••	00	24				
2-CH-TV-2204B	11548-CBM-088A	2 OF 2	D-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	CS CS OPB CS 24		6 6 6		
	LETDOWN CONTR ISOLATION VALVE		I REGEN	I HX, OUTSIDE C	ONTAI	NMENT			vi	00	27				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CS-013	11548-CBM-084A	2 OF 3	F-4	CHECK VALVE	8	2	AC	CIV	CV	C O	CM CM				
	"A" CONT SPRAY I CHECK VALVE	PUMP INS	IDE COI	NTAINMENT ISO	LATION	I DISCHA	RGE		LT	С	OPB				
2-CS-024	11548-CBM-084A	2 OF 3	E-4	CHECK VALVE	8	2	AC	CIV	CV	C O	CM CM				
	"B" CONT SPRAY I CHECK VALVE	PUMP INS	IDE CO	NTAINMENT ISO	LATION	I DISCHA	RGE		LT	č	OPB				
2-CS-045	11548-CBM-084A	1 OF 3	F-8	CHECK VALVE	2	2	С		CV	с С	CM CM				
	RWST COOLING S	YSTEM R	ETURN	ISOLATION CHE		VE				0	CIVI				
2-CS-104	11548-CBM-084A	2 OF 3	F-3	CHECK VALVE	8	2	С		CV	C O	CM CM				
	CONTAINMENT SP	PRAY PUN	IP DISC	HARGE CHECK	VALVE					Ŭ	OW				
2-CS-105	11548-CBM-084A	2 OF 3	E-3	CHECK VALVE	8	2	С		CV	C O	CM CM				
	CONTAINMENT SP	PRAY PUN	IP DISC	HARGE CHECK	VALVE					Ū	OW				
2-CS-147	11548-CBM-084A	2 OF 3	C-4	CHECK VALVE	3	2	AC		CV	C O	CM CM				
	CONTAINMENT SF	PRAY BLE	ED LINE	CHECK VALVE					LT	c	24				
2-CS-150	11548-CBM-084A	2 OF 3	C-4	CHECK VALVE	3	2	AC		cv	C O	CM CM				
	CONTAINMENT SF	PRAY BLE	ED LINE	CHECK VALVE					LT	c	24				

								ISO		_		REL	cs	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE		TEST FREQ	REQ V-	JUST CSV-		TEST VNC-
2-CS-MOV-200A	11548-CBM-084A	2 OF 3	B-7	MO GATE	12	2	В		EV ST VP	0 0 00	03 03 24				
	CONTAINMENT SP	PRAY PUN	IP SUCTI	ION ISOLATIO	N VALVE				۷F	00	24				
2-CS-MOV-200B	11548-CBM-084A	2 OF 3	A-7	MO GATE	12	2	В		EV ST	0	03				
									VP	O OC	03 24				
	CONTAINMENT SP	PRAY PUN	IP SUCTI	ION ISOLATIO	N VALVE				•1	00	24				
2-CS-MOV-201A	11548-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	С	03				
									1 T	0	03 OPB				
									LT ST	с с	098				
									0.	ŏ	03				
									VP	OC	24				
	"A" CONT SPRAY I CONTAINMENT IS			ISOLATION V	ALVE, O	UTSIDE									
2-CS-MOV-201B	11548-CBM-084A	2 OF 3	F-5	MO GATE	8	2	A	CIV	EV	С	03				
										0	03				
									LT ST	с с	OPB 03				
									0.	ŏ	03				
									VP	OC	24				
	"A" CONT SPRAY I CONTAINMENT IS			ISOLATION V	ALVE, O	UTSIDE									
2-CS-MOV-201C	11548-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV	c	03	*			
										0	03				
									LT ST	C C	OPB 03				
									51	ŏ	03				
									VP	oc	24				
	"B" CONT SPRAY			SOLATION V	ALVE, O	UTSIDE									

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-CS-MOV-201D	11548-CBM-084A	2 OF 3	E-5	MO GATE	8	2	A	CIV	EV LT ST VP	с осс ос ос	03 03 OPB 03 03 24				
	"B" CONT SPRAY I CONTAINMENT IS			ISOLATION V	ALVE, O	UTSIDE									
2-CS-MOV-202A	11548-CBM-084A	3 OF 3	C-6	MO BFLY	6	2	В		EV ST VP	0 0 00	03 03 24				
	CHEMICAL ADDITI	ON TANK	DISCHAR	RGE TO RWST	ISOLAT	ION VAL	VE		v,	00	24				
2-CS-MOV-202B	11548-CBM-084A	3 OF 3	B-6	MO BFLY	6	2	В		EV ST VP	0 0 00	03 03 24				
	CHEMICAL ADDIT	ON TANK	DISCHAR	RGE TO RWST	ISOLAT	ION VAL	VE								

				VAL					IADL	-				
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	 NC AL TEST VNC-
2-CV-002	11548-CBM-085A CONTAINMENT V/ ISOLATION VALVE	ACUUM E.		MAN GATE SUPPLY, OUT	8 SIDE CO	2 NTAINME		CIV	LT	С	OPB			
2-CV-HCV-200	11548-CBM-085A			AO GATE	8	2		CIV	LT VP	C OC	OPB 24			
	CONTAINMENT V	ACUUM E.	JECTOR,	INSIDE CONT	AINMEN	I ISOLAT	ION							
2-CV-TV-250A	11548-CBM-085A	2 OF 2	E-4	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24			
	"A" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIE	E						
2-CV-TV-250B	11548-CBM-085A	2 OF 2	E-5	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C	03 03 OPB 03 24			
	"A" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIC	E	VI	00	24			
2-CV-TV-250C	11548-CBM-085A	2 OF 2	D-4	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	"B" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIC	E	VP	UC	24			
2-CV-TV-250D	11548-CBM-085A	2 OF 2	D-5	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	"B" CONTAINMEN CONTAINMENT IS			SUCTION ISOL	ATION V	ALVE, O	UTSIC	E		00	- 7			

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE		TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	 NC ALT TEST VNC-
2-CW-MOV-200A	11548-CBM-071A	2 OF 3	F-7	MO BFLY	96	NC	В	EV EV ST VP	C P C OC	03 03 03 24		19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIO	N VALVE				VF	00	24			
2-CW-MOV-200B	11548-CBM-071A	2 OF 3	F-7	MO BFLY	96	NC	В	EV EV ST VP	C P C	03 03 03		19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIO	N VALVE				VP	OC	24			
2-CW-MOV-200C	11548-CBM-071A	2 OF 3	F-6	MO BFLY	96	NC	В	EV EV ST VP	C P C OC	03 03 03 24		19 19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIO	N VALVE				VF	00	24			
2-CW-MOV-200D	11548-CBM-071A	2 OF 3	F-5	MO BFLY	96	NC	В	EV EV ST	C P C	03 03 03		19 19 19 19	
	CONDENSER DISC	CHARGE I	SOLATIO	N VALVE				VP	OC	24			
2-CW-MOV-206A	11548-CBM-071A	2 OF 3	D-7	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	T ISOLAT		VE					00				
2-CW-MOV-206B	11548-CBM-071A	2 OF 3	D-7	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	ET ISOLAT		VE				•••	00	24			
2-CW-MOV-206C	11548-CBM-071A	2 OF 3	D-5	MO BFLY	96	3	В	EV ST VP	C C OC	03 03 24		19 19	
	CONDENSER INLE	T ISOLAT	ION VAL	νE				••	00				
2-CW-MOV-206D	11548-CBM-071A	2 OF 3	D-5	MO BFLY	96	3	В	EV ST	C C	03 03		19 19	

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VALVE NUMBER	DRAWING NUMBER		••••	VALVE TYPE	VALVE SIZE	ASME CLASS	ISTC V	ISO ALVE YPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-	
2-CW-MOV-206D	11548-CBM-071A CONDENSER INLE	2 OF 3	D-5	MO BFLY	96	3	В		VP	OC	24					برد

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-DA-TV-200A	11548-CBM-083B	3 OF 3	B-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	REACTOR CONTA CONTAINMENT IS			MPS DISCHAF	rge, ins	IDE									
2-DA-TV-200B	11548-CBM-083A	1 OF 2	E-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	С С С С С С С	03 03 OPB 03 24				
	REACTOR CONTA CONTAINMENT IS			MPS DISCHAF	rge, ou	ISIDE			vi	00	24				
2-DA-TV-203A	11548-CBM-083B	3 OF 3	E-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	POST ACCIDENT		SYSTEMI	RETURN, OUT	SIDE CO	NTAINM	ENT		••	00	24				
2-DA-TV-203B	11548-CBM-083B	3 OF 3	E-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	POST ACCIDENT	SAMPLE S	SYSTEMI	RETURN, OUT	SIDE CO	NTAINM	ENT T	RIP	vi	00	27				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-DG-TV-208A	11548-CBM-083B	1 OF 3	B-2	AO GATE	2	2	A	CIV	EV FS LT ST VP	С С С С С С С	03 03 OPB 03 24				
	PRIMARY DRAIN T		R PUMPS	DISCHARGE,	INSIDE (CONTAIN	IMENT								
2-DG-TV-208B	11548-CBM-083A	2 OF 2	C-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	PRIMARY DRAIN T		R PUMPS	DISCHARGE,	OUTSIDI	E CONTA	INME	NT		00					

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
1-EE-013	11448-FB -038A DIESEL EMERGEN	2 OF 3					C	CV	с о	CM CM				
	DIESEL EINERGEN		RA: OK	FUEL OIL POIN		ANGE C	HECK							
1-EE-031	11448-FB -038A	2 OF 3	D-6	CHECK VALVE	1.5	NC	С	CV	C O	CM CM				
	DIESEL EMERGEN	NCY GENE	RATOR	FUEL OIL PUMP	P DISCH	ARGE C	HECK							
1-EE-RV-104	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION	2 OF 3 PUMP DIS		RELIEF VALVE E RELIEF VALVI		NC SCHARG	C E TO	SP	0	120				4
1-EE-RV-107	11448-FB -038A DIESEL FUEL OIL PUMP SUCTION	2 OF 3 PUMP DIS		RELIEF VALVE E RELIEF VALVI		NC SCHARG	C E TO	SP	0	120				4
1-EE-SOV-102	11448-FB -038A DIESEL FUEL OIL	2 OF 3 PUMP DIS		SO GATE E VALVE	1	NC	В	EV	0	03				2
1-EE-SOV-103	11448-FB -038A DIESEL FUEL OIL	2 OF 3 PUMP DIS		SO GATE E VALVE	1	NC	В	EV	0	03				2

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SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

				VA		NSERV	ICE TEST I	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
2-EG-040	11448-FB -046B	1 OF 3	B-6	CHECK VALVE	0.75	NC	AC	CV	C O	CM CM			
	DIESEL GENERAT	FOR COM	PRESSC	R DISCHARGE	СНЕСК	VALVE		LT	С	24			
2-EG-042	11448-FB -046B	1 OF 3	B-5	CHECK VALVE	0.75	NC		CV	C O	CM CM			
-	DIESEL GENERAT		PRESSO	R DISCHARGE	СНЕСК	VALVE		LŤ	С	24			
2-EG-043	11448-FB -046B	1 OF 3	E-7	AIR PILOT	0	NC	В	EV ST	0	03 NA			 1
	EMERGENCY DIE CONTROL VALVE		ERATOR	STARTING AIR/	DRIVE A	AIR		51	0				
2-EG-044	11448-FB -046B	1 OF 3	E-3	AIR PILOT	0	NC	В	EV ST	0	03 NA			
	EMERGENCY DIE CONTROL VALVE		ERATOR	STARTING AIR/	DRIVE A	AIR		0,	Ū	101			·
2-EG-045	11448-FB -046B	1 OF 3	E-7	CHECK VALVE	0	NC	С	cv	C	CM CM			
	EMERGENCY DIE VALVE	SEL GENE	ERATOR	START PRESSU	JRE EQ	UALIZING	G CHECK		0	CIVI			
2-EG-046	11448-FB -046B	1 OF 3	E-4	CHECK VALVE	0	NC	С	cv	C O	CM CM			
	EMERGENCY DIE VALVE	SEL GENE	ERATOR	START PRESSU	JRE EQ	UALIZING	G CHECK		Ū	0111			
2-EG-SOV-200A	11448-FB -046B	1 OF 3	D-7	SO GATE	1	NC	В	EV	C O	 03 03			
								ST	C C	NA NA			1 1
	DIESEL AIR STAR	TSYSTEM	1 SOLEN						0				ł
2-EG-SOV-200B	11448-FB -046B	1 OF 3	D-4	SO GATE	1	NC	В	EV	C O	 03 03			
								ST	C O	NA NA			1 1
	DIESEL AIR STAR	-							U	INA			I

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FP-151	11548-CBB-047B FIRE PROTECTION ISOLATION VALVE		D-6 (TO CON	MAN BALL ITAINMENT, O	4 UTSIDE	2 CONTAIN	AE IMEN	CIV T	LT	С	OPB				
2-FP-152	11548-CBB-047B FIRE PROTECTION ISOLATION VALVE			MAN BALL ITAINMENT, O	4 UTSIDE	2 CONTAIN	AE IMEN	CIV T	LT	С	OPB				

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VALVE NUMBER	DRAWING NUMBER	SHEET COC	VALVE PR TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-010	11548-CBM-068A	1 OF 4 E-6	CHECK VALVE	14	2	С	CV	C O	CM CM				
. • . <u>.</u>	"A" MAIN FEEDWA CHECK VALVE	TER SUPPLY,	INSIDE CONTAINM	ENT PE	NETRAT	ION		U	CIVI		, t., t	•• •	
2-FW-012	11548-CBM-068A	1 OF 4 E-5	CHECK VALVE	14	2	С	CV	C O	CM CM				
	"A" MAIN FEEDWA CHECK VALVE	TER SUPPLY,	OUTSIDE CONTAIN	IMENT	PENETR/	ATION		0	CIVI				
2-FW-027	11548-CBM-068A	1 OF 4 E-6	CHECK VALVE	3	2	С	CV	с 0	CM				
	"A" AUXILIARY FEI HEADER	EDWATER HEA	DER CHECK VALV	E AT M	AIN FEEC	OWATER		0	СМ				
2-FW-030	11548-CBM-068A	1 OF 4 B-6	CHECK VALVE	3	2	С	CV	C O	CM				
	AUXILIARY FEEDV	VATER HEADE	R SUPPLY ISOLATI	ON CH	ECK VAL	VE		0	СМ				
2-FW-031	11548-CBM-068A	1 OF 4 B-5	CHECK VALVE	3	2	С	CV	C O	CM CM				
	AUXILIARY FEEDV	VATER HEADE	R SUPPLY ISOLATI	ON CH	ECK VAL	VE		0	CIM				
2-FW-041	11548-CBM-068A	1 OF 4 D-6	CHECK VALVE	14	2	С	cv	C O	CM				
	"B" MAIN FEEDWA PENETRATION CH		SUPPLY, INSIDE C	ONTAIN	MENT			0	СМ				
2-FW-043	11548-CBM-068A	1 OF 4 D-5	CHECK VALVE	14	2	С	CV	C	CM CM				
	"B" MAIN FEEDWA CHECK VALVE	TER SUPPLY,	OUTSIDE CONTAIN	IMENT	PENETR/	ATION		0	CM				
2-FW-058	11548-CBM-068A	1 OF 4 C-6	CHECK VALVE	3	2	C	CV	c	CM				
	"B" AUXILIARY FEI HEADER	EDWATER HEA	DER CHECK VALV	ΈAΤ Μ	AIN FEE	OWATER		0	СМ				

				VA		NSERV	ICE IEST I	ABLE					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
2-FW-061	11548-CBM-068A	1 OF 4	B-6	CHECK VALVE	3	2	С	cv	C O	CM CM			
	AUXILIARY FEED	WATER HE	EADER S	SUPPLY ISOLATI	ON CHI	ECK VAL	VE		Ũ	0 WI			
2-FW-062	11548-CBM-068A	1 OF 4	B-6	CHECK VALVE	3	2	С	CV	C O	CM CM			
	AUXILIARY FEED	WATER HE	EADER S	SUPPLY ISOLATI	ON CHI	ECK VAL	VE		U	Civi ,			
2-FW-072	11548-CBM-068A	1 OF 4	C-6	CHECK VALVE	14	2	С	cv	C O	CM CM			
	"C" MAIN FEEDWA CHECK VALVE	ATER SUP	PLY, INS	SIDE CONTAINM	ENT PE	NETRAT	ION		Ū	CIVI			
2-FW-074	11548-CBM-068A	1 OF 4	C-5	CHECK VALVE	14	2	С	CV	C O	CM CM			
	"C" MAIN FEEDWA CHECK VALVE	ATER SUP	PLY, OU	ITSIDE CONTAIN	IMENT	PENETR	ATION		0	Civi			
2-FW-089	11548-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	С	CV	C O	CM CM			
	"C" AUXILIARY FE HEADER	EDWATE	r heade	ER CHECK VALV	E AT M	AIN FEE	OWATER		U	CIVI			
2-FW-092	11548-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	С	CV	C O	CM CM			
	AUXILIARY FEED	WATER HE	EADER S	SUPPLY ISOLATI	ON CHI	ECK VAL	VE		0	CIVI			
2-FW-093	11548-CBM-068A	1 OF 4	B-7	CHECK VALVE	3	2	С	cv	C O	CM			
	AUXILIARY FEED	VATER HE	EADER S	SUPPLY ISOLATI	ON CH	ECK VAL	VE		0	СМ			
2-FW-131	11548-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C	cv	с 0	CM			
	AUXILIARY FEEDV PENETRATION - II		EADER (CHECK VALVE A	T CONT	AINMEN	т		0	СМ			
2-FW-133	11548-CBM-068A	1 OF 4	B-4	CHECK VALVE	6	2	C	CV	C	CM CM			
	AUXILIARY FEED PENETRATION - C		EADER (CHECK VALVE A	T CONT	AINMEN	т		0	CIVI			

				VAL V										
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISC ISTC VALV CAT TYPE	VE TES	T TEST	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-136	11548-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	С	C۷	C O	CM CM				
	AUXILIARY FEEDV PENETRATION - IN		ADER (CHECK VALVE A	T CONT	AINMEN	т		0	Civi				
2-FW-138	11548-CBM-068A	1 OF 4	A-4	CHECK VALVE	6	2	С	CV	C O	CM CM				
	AUXILIARY FEEDV PENETRATION - O		ADER (CHECK VALVE A	T CONT	AINMEN	т		0	Civi				
2-FW-140	11548-CBM-068A AFW PUMP DISCH				- -	3 NNECT \	-	EV	С	24				
2-FW-141	11548-CBM-068A AFW PUMP DISCH					3 NNECT \	B /ALVE	EV	C	24				
2-FW-142	11548-CBM-068A	3 OF 4	D-8	CHECK VALVE	6	3	С	CV	C O	CM CM				-**********
	TURBINE DRIVEN	AUXILIAR	Y FEED	WATER PUMP D	ISCHA	RGE CHE	ECK		0	CIM				
2-FW-144	11548-CBM-068A	3 OF 4	D-7	CHECK VALVE	1	3	С	CV	C O	CM CM				
	TURBINE DRIVEN	AUXILIAR	Y FEED	WATER PUMP R	RECIRC	LINE CH	ECK		0	CIVI				
2-FW-148	11548-CBM-068A	3 OF 4	E-7	CHECK VALVE	1	3	С	C۷	C O	CM CM				
	AUXILIARY FEEDV	VATER TO	PUMP	OIL COOLER CH	IECK V	ALVE			0	CIVI				
2-FW-155	11548-CBM-068A AFW PUMP DISCH						-	ΕV	C	24				
2-FW-156	11548-CBM-068A AFW PUMP DISCH					3 NNECT \	B /ALVE	EV	С С	24				
2-FW-157	11548-CBM-068A	3 OF 4	D-6	CHECK VALVE	6	3	С	CV	C O	CM				
	"A" MOTOR DRIVE	N AUXILIA	RY FEE	EDWATER PUMP	DISCH	ARGE C	HECK		0	СМ				

SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR				ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-FW-159	11548-CBM-068A	3 OF 4	D-6	CHECK VALVE	1	3	С	CV	C O	CM CM	• • • • • • • • • • • • • • • • • • •			
	"A" MOTOR DRIVE VALVE	EN AUXILIA	RY FEI	EDWATER PUMF	PRECIR		HECK		0	Civi				
2-FW-163	11548-CBM-068A	3 OF 4	E-6	CHECK VALVE	1	3	С	CV	C	CM				
		WATER TO	PUMP	OIL COOLER CH	HECK V	ALVE			0	СМ				
2-FW-170	11548-CBM-068A AFW PUMP DISCI					3 NNECT \	B /ALVE	EV	С	24				
2-FW-171	11548-CBM-068A AFW PUMP DISCI					3 NNECT \	B /ALVE	EV	С	24				
2-FW-172	11548-CBM-068A	3 OF 4	D-5	CHECK VALVE	6	3	С	CV	C O	CM				
	"B" MOTOR DRIVE	EN AUXILIA	RY FEE	EDWATER PUMF	PDISCH	IARGE CI	HECK		0	СМ				
2-FW-174	11548-CBM-068A	3 OF 4	D-5	CHECK VALVE	1	3	С	CV	C O	CM CM				
	"B" MOTOR DRIVE VALVE	EN AUXILIA	RY FEE	EDWATER PUMF	RECIR		HECK		0	Civi				
2-FW-178	11548-CBM-068A	3 OF 4	E-4	CHECK VALVE	1	3	С	CV	C O	CM CM				*************
		WATER TO	PUMP	OIL COOLER CH	HECK V	ALVE			0	CIVI				
2-FW-272	11548-CBM-068A	1 OF 4	A-8	CHECK VALVE	6	2	С	CV	C O	CM CM				
	CHECK VALVE AT FROM UNIT 1)	CONT PE	NE (CR	OSS-CONNECT	FOR UN	NIT 2 AUX	(FEED		0	Civi				
2-FW-273	11548-CBM-068A	1 OF 4	A-7	CHECK VALVE	6	2	С	cv	C O	CM CM				
	CHECK VALVE AT FROM UNIT 1)	CONT PE	NE (CR	OSS-CONNECT	For u	NIT 2 AUX	(FEED		U	CIVI				

							ISO				REL	CS	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	RÉQ V-	JUST CSV-	JUST RRV-	TEST VNC-
2-FW-305	11548-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	С	CV	C O	CM CM				
5 	CHECK VALVE AT FROM UNIT 1)	CONT PE	ENE (CR	OSS-CONNECT F	FOR UN	IIT 2 AUX	FEED		0	CIVI				
2-FW-306	11548-CBM-068A	1 OF 4	A-5	CHECK VALVE	6	2	С	cv	C O	CM CM				
	CHECK VALVE AT FROM UNIT 1)	CONT PE	ENE (CR	OSS-CONNECT F	FOR UN	IIT 2 AUX	FEED							
2-FW-FCV-2478	11548-CBM-068A	1 OF 4	E-4	AO GATE	14	NC	В	EV FS ST VP	C C C OC	CS CS NA 24		14 14		3
	MAIN FEEDWATE	R REGULA	ATING V	ALVE				•						
2-FW-FCV-2488	11548-CBM-068A	1 OF 4	D-4	AO GATE	14	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
	MAIN FEEDWATER	R REGULA	ATING V	ALVE				VP	OC	24				
2-FW-FCV-2498	11548-CBM-068A	1 OF 4	B-4	AO GATE	14	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
	MAIN FEEDWATER	R REGULA	ATING V	ALVE				VP	OC	24				
2-FW-HCV-255A	11548-CBM-068A	1 OF 4	F-3	AO GATE	4	NC	В	EV FS ST VP	C C C OC	CS CS NA		14 14		3
	MAIN FEEDWATE	R REGULA	ATING V	ALVE BYPASS V	ALVE			VP		24				
2-FW-HCV-255B	11548-CBM-068A	1 OF 4	D-3	AO GATE	4	NC	В	EV FS ST	C C C	CS CS NA		14 14		3
				AI VE RYPASS V				VP	OC	24				

Serial No. 13-268 Docket Nos. 50-281 Enclosure 2, Attachment 4

SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

				V AL		OLIV			-					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-FW-HCV-255C	11548-CBM-068A	1 OF 4	C-3	AO GATE	4	NC	В	EV FS ST VP	C C C OC	CS CS NA 24		14 14		3
	MAIN FEEDWATER	R REGUL/	ATING VA	ALVE BYPASS \	/ALVE			••	00	- '				
2-FW-MOV-251A	11548-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	В	EV	C O	03 03				,
								ST VP	с 0 0С	03 03 24				
		RY FEEDV	WATER S	SUPPLY TO "C"	STEAM	GENERA	TOR	VF	00	24				
2-FW-MOV-251B	11548-CBM-068A	1 OF 4	B-7	MO GLOBE	3	2	В	EV	C O	03 03				
								ST VP	С О ОС	03 03 24				
	STANDBY AUXILIA	RY FEED	WATER	SUPPLY TO "C'	STEAM	GENER	ATOR	vr	00	24				
2-FW-MOV-251C	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	В	EV	C O	03 03				
								ST	C O	03 03				
	STANDBY AUXILIA	RY FEED	WATER	SUPPLY TO "B"	STEAM	GENER	ATOR	VP	OC	24				
2-FW-MOV-251D	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	В	EV	C O	03 03				
								ST	C O	03 03				
	NORMAL AUXILIA	RY FEEDV	NATER S	SUPPLY TO "B"	STEAM	GENERA	TOR	VP	OC	24				
2-FW-MOV-251E	11548-CBM-068A	1 OF 4	B-6	MO GLOBE	3	2	В	EV	С	03				
								ST	0 C 0	03 03 03				
	STANDBY AUXILIA							VP	OC	24				

Revision 0

FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE ISO REL CS RR NC ALT VALVE VALVE VALVE ASME ISTC VALVE TEST TEST TEST DRAWING REQ JUST JUST TEST NUMBER NUMBER SHEET COOR TYPE SIZE CLASS CAT TYPE TYPE POS FREQ V-CSV- RRV-VNC-2-FW-MOV-251F 11548-CBM-068A 1 OF 4 B-5 MO GLOBE 3 2 В ΕV С 03 0 03 С 03 ST 0 03 VP OC 24 STANDBY AUXILIARY FEEDWATER SUPPLY TO "A" STEAM GENERATOR 2-FW-MOV-260A 11448-CBM-068A 3 OF 4 F-7 ΕV 0 03 MO GLOBE 6 3 в 0 ST 03 VP OC 24 CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2 2-FW-MOV-260B 11448-CBM-068A 3 OF 4 F-7 MO GLOBE 6 3 в ΕV 0 03 0 ST 03

VP

OC

24

SURRY UNIT 2

CROSS - CONNECT FOR UNIT 1 AUXILIARY FEEDWATER FROM UNIT 2

S2PVI5

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-GW-TV-200	11448-CBM-090C	1 OF 1		SO GATE	0.375	52	A	CIV	EV FS LT ST VP	C C C C C C O C	03 03 OPB 03 24				
	SUCTION LINE TO	HYDROG	GEN ANAL	YZER - UNIT	1										
2-GW-TV-201	11448-CBM-090C			SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	SUCTION LINE TO	HYDROG	SEN ANAL	YZER - UNIT	1										
2-GW-TV-202	11448-CBM-090C	1 OF 1	B-4	SO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24				
	DISCHARGE LINE	TO HYDR	OGEN A	NALYZER - UN	IT 1				٧٣	00	24				
2-GW-TV-203	11448-CBM-090C	1 OF 1	B-4	SO GATE	0.375	5 2	A	CIV	EV FS LT ST	C C C C C OC	03 03 OPB 03				
	DISCHARGE LINE	TO HYDR	OGEN A	NALYZER - UN	IT 1				VP	00	24				
2-GW-TV-204	11448-CBM-090C	1 OF 1	E-4	SO GATE	0.375	5 2	A	CIV	EV FS LT ST	C C C C	03 03 OPB 03				
	SUPPLY TO UNIT : ISOLATION VALVE		GEN ANA	LYZER, OUTS	IDE CON	TAINME	NT		VP	õc	24				

				••••											
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS		REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-GW-TV-205	11448-CBM-090C	1 OF 1	E-4	SO GATE	0.37	52	A	CIV	FS LT ST VP	C C C OC	03 OPB 03 24				
	SUPPLY TO UNIT		GEN ANA	LYZER, OUTS	IDE CON	ITAINME	NT								
2-GW-TV-206	11448-CBM-090C	1 OF 1	D-4	SO GATE	0.37	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24				
	RETURN FROM UI		ROGEN	ANALYZER, O	UTSIDE	CONTAI	NMEN	т							
2-GW-TV-207	11448-CBM-090C	1 OF 1	D-4	SO GATE	0.37	52	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				
	RETURN FROM UI		ROGEN	ANALYZER, O	UTSIDE	CONTAII	MEN	T	vi	00	LŦ				
2-GW-TV-211A	11448-CBM-090C	1 OF 1	F-3	SO GATE	0.37	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	UNIT 1 SAMPLE LI ISOLATION VALVE		r sampl	E PANEL, INSI	DE CON	TAINME	NT					-			
2-GW-TV-211B	11448-CBM-090C	1 OF 1	F-3	SO GATE	0.37	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				

VALVE	DRAWING		VALVE	VALVE ASM	ISO ISTC VALVE	TEST	TEST	TEST	REL REQ	CS JUST	RR JUST	NC ALT TEST
NUMBER	NUMBER	SHEET COOR	TYPE	SIZE CLASS	S CAT TYPE	TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
		INE TO AIR SAMPLE			MENT							

ISOLATION VALVE

VALVE NUMBER	DRAWING NUMBER	SHEET (COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-IA-381	11548-FM -075C	2 OF 2	B-6	CHECK VALVE	0.75	NC	С		CV	C O	CM CM				
	BOTTLED AIR SUI	PPLY TO 2-	RC-PC	V-2456 SUPPLY	CHECK	VALVE									
2-IA-384	11548-FM -075C	2 OF 2	B-5	CHECK VALVE	0.75	NC	С		CV	C O	CM CM				
	BOTTLED AIR SU	PPLY TO 2-	RC-PC	V-2455C SUPPLY	CHEC	K VALVE				-					
2-IA-395	11548-FM -075C	2 OF 2	B-6	CHECK VALVE	0.75	NC	AC		CV	C O	CM CM				
	BOTTLED AIR SUI	PPLY TO 2-	RC-PC	V-2456 ISOLATIC	N CHE	CK VALV	Æ		LT	С	24				
2-IA-396	11548-FM -075C	2 OF 2	B-5	CHECK VALVE	0.75	NC	AC		cv	C O	CM CM				
	BOTTLED AIR SUI	PPLY TO 2-	RC-PC	V-2455C ISOLAT	ION CH	ECK VAI	VE		LT	Ċ	24				
2-IA-446	11448-CBM-075C BACKUP INSTRUI			MAN GATE	2 M UNIT	2	AE	CIV	LT	С	ОРВ				
2-IA-704	11548-CBM-075B BACKUP INSTRUI			MAN GATE	2 M UNIT		AE	CIV	LT	С	ОРВ				
2-1A-864	11548-CBM-075C	1 OF 2	E-3	CHECK VALVE	2	2	AC	CIV	CV	C O	CM CM				
	INSTRUMENT AIR		O CON	TAINMENT, INSI	DE COI	NTAINME	NT		LT	Ċ	OPB				
2-IA-868	11548-CBM-075C	1 OF 2	E-3	CHECK VALVE	2	2	AC	CIV	CV	C O	CM CM				
	INSTRUMENT AIR		O CON	TAINMENT, INSI	DE COI	NTAINME	NT		LT	С	OPB				
 2-IA-947	11548-FM -075D	1 OF 1	D-7	CHECK VALVE	0.5	NC	AC		cv	С	СМ				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-IA-947	11548-FM -075D	1 OF 1	B-7	CHECK VALVE	0.5	NC	AC		CV LT	0 C	CM 24				
	BOTTLED AIR SUP	PPLY TO 2	-MS-PC	V-202A,B ISOLAT	TION CH	HECK VA	LVE								
 2-IA-948	11548-FM -075D	1 OF 1	D-8	CHECK VALVE	0.5	NC	С		CV	C O	CM CM				
	BOTTLED AIR SUP	PPLY TO 2	-MS-PC	V-202A,B SUPPL	Y CHE	CK VALV	E								
2-IA-RV-210	11548-FM -075C BOTTLED AIR SUF	2 OF 2 PPLY TO P		RELIEF VALVE RELIEF VALVE	0	NC	С		SP	0	120				
2-IA-RV-211	11548-FM -075C BOTTLED AIR SUF	2 OF 2 PPLY TO P		RELIEF VALVE RELIEF VALVE	0	NC	С		SP	0	120				
 2-IA-RV-223	11548-FM -075C BOTTLED AIR SUF	2 OF 2 PPLY TO P		RELIEF VALVE RELIEF VALVE	0	NC	с		SP	0	120				
 2-IA-RV-224	11548-FM -075C BOTTLED AIR SUF	2 OF 2 PPLY TO P		RELIEF VALVE RELIEF VALVE	0	NC	С		SP	0	120				
2-IA-TV-200	11548-CBM-075B	2 OF 2	B-3	AO GATE	2	2	A	CIV	EV FS LT ST	с с с с	03 03 OPB 03				
	INSTRUMENT AIR		FO CON	TAINMENT, OUT	SIDE C	ONTAINI	MENT		VP	OC	24				
2-IA-TV-201A	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	Α	CIV	EV FS LT ST	с с с с	03 03 OPB 03				
	INSTRUMENT AIR	SUCTION	FROM	CONTAINMENT					VP	oc	24				
2-IA-TV-201B	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	EV FS	C C	03 03				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	SIZE	CLASS	CAT		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-	
2-IA-TV-201B	11548-CBM-075J	1 OF 1	A-3	AO GATE	3	2	A	CIV	LT ST VP	C C OC	OPB 03 24					· • · • •
	INSTRUMENT AIR	SUCTION	FROM (CONTAINMENT												

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME			ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-LM-TV-200A	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.37	52	ļ	4	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	JPPLY,	OUT	SID	E							
2-LM-TV-200B	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.37	5 2	<i> </i>	4	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	JPPLY,	OUT	SID	E							
2-LM-TV-200C	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.37	5 2	ļ	4	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	JPPLY,	OUT	SID	E							
2-LM-TV-200D	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.37	5 2	ļ	4	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	CONTAINMENT LE CONTAINMENT IS			ING OPEN SY	STEM SU	JPPLY,	OUT	SID	E							
2-LM-TV-200E	11548-CBM-085A	1 OF 2	B-4	AO GATE	0.37	5 2	ļ	۹.	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	• - + •	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	CONTAINMENT LE CONTAINMENT IS			NG OPEN SY	STEM SU	PPLY, O	UTSI	DE							
2-LM-TV-200F	11548-CBM-085A	1 OF 2	B-5	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONTAINMENT LE			NG OPEN SYS	STEM SU	PPLY, O	UTSII	DE							
2-L M- TV-200G	11548-CBM-085A	1 OF 2	B-6	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	CONTAINMENT LE			NG OPEN SYS	STEM SU	PPLY, O	UTSII	DE		00	21				
2-LM-TV-200H	11548-CBM-085A	1 OF 2	B-7	AO GATE	0.375	5 2	A	CIV	EV FS LT ST VP	C C C C C C C	03 03 OPB 03 24				
	CONTAINMENT LE			NG OPEN SYS	STEM SU	PPLY, O	UTSI	DE .	Vr	00	27				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOF			ASME	ISTC V	 TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
2-MS-087	11548-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE				2 VATER P	B PUMP	 EV	С	24			
2-MS-120	11548-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE				2 VATER P	B PUMP	 EV	С	24			
2-MS-158	11548-CBM-064A MAIN STEAM LINE ISOLATION VALVE	TO TURE				2 VATER P	B PUMP	 EV	С	24			
 2-MS-176	11548-CBM-064A "A" MAIN STEAM H AUXILIARY FEEDV	IEADER S	UPPLY		-	2 BINE DRI	C	 CV	C O	CM CM			
2-MS-178	11548-CBM-064A "B" MAIN STEAM H AUXILIARY FEEDV	EADER S	UPPL		-	2 BINE DRI	C	 CV	C O	CM CM			
2-MS-182	11548-CBM-064A "C" MAIN STEAM H AUXILIARY FEEDV	HEADER S	UPPL		-	2 BINE DR	C	 CV	C O	CM CM			
2-MS-NRV-201A	11548-CBM-064A "A" MAIN STEAM F				K 30	NC	С	 CV VP	C O OC	CM CM 24			
2-MS-NRV-201B	11548-CBM-064A "B" MAIN STEAM H				K 30	NC	С	 CV VP	C O OC	CM CM 24			
2-MS-NRV-201C	11548-CBM-064A	3 OF 6	D-3	MO STOP CHEC	К 30	NC	С	 CV	С	СМ			

.

							ISO				REL	CS	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOF	VALVE R TYPE			ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
2-MS-NRV-201C	11548-CBM-064A	3 OF 6	D-3	MO STOP CHEC	СК 30	NC	С	CV	0	СМ				
	"C" MAIN STEAM H		ION-RI	ETURN VALVE				VP	OC	24				
2-MS-PCV-202A	11548-CBM-064A	4 OF 6	C-4	AO GATE	3	2	В	EV	С	03				
								FS	0	03 03				
								ST	c	03				
								0.	ŏ	03				
								VP	OC	24				
	MAIN STEAM SUP FEEDWATER PUM		VALVE	E TO TURBINE DF	RIVEN AU	UXILIARY	<i>,</i>							
2-MS-PCV-202B	11548-CBM-064A	4 OF 6	D-5	AO GATE	3	2	В	EV	C	03				
								50	0	03				
								FS ST	0 C	03 03				
								31	ŏ	03				
								VP	oc	24				
	MAIN STEAM SUP FEEDWATER PUM		VALVE	E TO TURBINE DF	RIVEN AI	UXILIARY	/							
2-MS-RV-201A	11548-CBM-064A	1 OF 6	E-5	AO ANGLE	4	2	в	EV	С	RR			3	
								FS	С	RR			3	
								ST	C OC	NA	NOTE 1			
	"A" MAIN STEAM H OPERATED RELIE		DISCHA	ARGE TO ATMOS	PHERE F	POWER		VP	00	24				
 2-MS-RV-201B	11548-CBM-064A	2 OF 6	E-6	AO ANGLE	4	2	В	EV	С	RR			3	
								FS	С	RR			3	
								ST	C	NA	NOTE 1			
	"B" MAIN STEAM H OPERATED RELIE		DISCHA	ARGE TO ATMOS	PHERE F	POWER		VP	OC	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET CO	VALV OR TYPI		VE ASME E CLASS		TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
2-MS-RV-201C	11548-CBM-064A "C" MAIN STEAM F OPERATED RELIE	HEADER DISC			_	B	ST VP	с ос	NA 24	NOTE 1			·•
2-MS-SV-201A	11548-CBM-064A "A" MAIN STEAM F	1 OF 6 E-6				C MOS	 SP	0	60				
2-MS-SV-201B	11548-CBM-064A "B" MAIN STEAM H					C MOS	 SP	0	60				
2-MS-SV-201C	11548-CBM-064A "C" MAIN STEAM H			VALVE 4 V DISCHAR	2 GE TO AT	-	 SP	0	60			***	
2-MS-SV-202A	11548-CBM-064A "A" MAIN STEAM H				2 GE TO AT	C MOS	 SP	0	60				
2-MS-SV-202B	11548-CBM-064A "B" MAIN STEAM H					C MOS	 SP	0	60				,
2-MS-SV-202C	11548-CBM-064A "C" MAIN STEAM F					-	 SP	0	60				
2-MS-SV-203A	11548-CBM-064A "A" MAIN STEAM H				2 GE TO AT		 SP	0	60				·
2-MS-SV-203B	11548-CBM-064A "B" MAIN STEAM F			VALVE 6 V DISCHAR	2 GEE TO A	-	 SP	0	60				
2-MS-SV-203C	11548-CBM-064A "C" MAIN STEAM H				2 GE TO AT	C MOS	 SP	0	60				
2-MS-SV-204A	11548-CBM-064A "A" MAIN STEAM F				2 GE TO AT	C MOS	 SP	0	60				
2-MS-SV-204B	11548-CBM-064A	2 OF 6 D-0	6 SAFETY	VALVE 6	2	С	 SP	0	60				,,

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
	"B" MAIN STEAM	HEADER S	AFETY	VALVE, SV DIS	CHARGE	ΤΟ ΑΤΜ	os						*	*********
2-MS-SV-204C	11548-CBM-064A "C" MAIN STEAM				-			SP	0	60				
2-MS-SV-205A	11548-CBM-064A "A" MAIN STEAM I			•··· = · · · ·· - ·		-	-	SP	0	60				
2-MS-SV-205B	11548-CBM-064A "B" MAIN STEAM I				-	2 TO ATM	-	SP	0	60				
2-MS-SV-205C	11548-CBM-064A "C" MAIN STEAM			••••••••••		_	-	SP	0	60				
2-MS-TV-201A	11548-CBM-064A	1 OF 6	D-4	AO CHECK VAL	VE 30	2	В	EV ST VP	C C OC	CS CS 24		1 1		
	"A" MAIN STEAM I	HEADER T	RIP VA	LVE										
2-MS-TV-201B	11548-CBM-064A	2 OF 6	C-4	AO CHECK VAL	VE 30	2	В	EV ST VP	C C OC	CS CS 24		1 1		
	"B" MAIN STEAM I	HEADER T	RIP VA	LVE				••	00	27				
2-MS-TV-201C	11548-CBM-064A	3 OF 6	C-4	AO CHECK VAL	VE 30	2	В	EV ST	C C	CS CS		 1 1		
	"C" MAIN STEAM	HEADER T		LVE				VP	OC	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-RC-160	11548-CBM-086B	2 OF 3	D-7	CHECK VALVE	3	2	AC	CIV	CV	c	CM				
									LT	o C	CM OPB				
	PRIMARY GRADE	WATER S	UPPLY	TO PRESSURIZE	ER RELI	EF TANK	K								
2-RC-HCV-2556A	11548-CBM-086A			AO PLUG	2	1	E		VP	OC	24				
			VE												
2-RC-HCV-2556B	11548-CBM-086A			AO PLUG	2	1	Е		VP	OC	24				
	LOOP FILL BOUND	DARY VAL	VE												
2-RC-HCV-2556C	11548-CBM-086A			AO PLUG	2	1	E		VP	OC	24				
	LOOP FILL BOUND	DARY VAL	VE												
2-RC-MOV-2535	11548-CBM-086B	1 OF 3	E-4	MO GATE	3	1	В		EV	С	03				
									ст	0	03				
									ST	C O	03 03				
									VP	ŏč	24				
	BLOCK VALVE FO	R PRESS	URIZER	POWER OPERA	TED RE	LIEF VA	LVE								
2-RC-MOV-2536	11548-CBM-086B	1 OF 3	D-4	MO GATE	3	1	В		EV	С	03				
										0	03				
									ST	C O	03 03				
									VP	oc	24	•			
									••						
	BLOCK VALVE FO	R PRESS	URIZER	POWER OPERA	TED RE		LVE								
2-RC-PCV-2455C	BLOCK VALVE FO 11548-CBM-086B			POWER OPERA AO PLUG	TED RE 	LIEF VAI	LVE BC		EV	с	CS		3		
2-RC-PCV-2455C										0	CS		3 3		
2-RC-PCV-2455C									FS	0 C	CS CS				
2-RC-PCV-2455C										0	CS				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC ALT TEST VNC-
	PRESSURIZER PC DISCHARGE TO P				ONTROL	VALVE							
2-RC-PCV-2456	11548-CBM-086B			AO PLUG	3	1	BC	EV FS ST VP	с осс ос ос	CS CS CS CS CS 24		3 3 3 3 3 3	
	PRESSURIZER PC DISCHARGE TO P				ONTROL	VALVE							
2-RC-SOV-200A1	11548-CBM-086A	3 OF 3	B-5	SO GATE	1	1	В	EV FS ST VP	C O C C O C	CS CS CS CS CS		16 16 16 16 16	
	REACTOR VESSE	L VENT LI	NE ISOLA	TION VALVE	TO REFU	IELING C	AVITY	VP	00	24			
2-RC-SOV-200A2	11548-CBM-086A REACTOR VESSE			SO GATE		1 IELING C	B	EV FS ST VP	с оссо ос	CS CS CS CS CS 24		16 16 16 16 16	
2-RC-SOV-200B1	11548-CBM-086A	3 OF 3	B-5	SO GATE	1	1	В	EV FS ST VP	C O C C O C	CS CS CS CS CS CS 24		16 16 16 16 16	
	REACTOR VESSE	L VENT LI	NE ISOLA	TION VALVE	TO REFU	IELING C	AVITY						

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS	ISTC V		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RC-SOV-200B2	11548-CBM-086A	3 OF 3	A-5	SO GATE	1	1	В		EV	C O	CS CS		16 16		
									FS	č	CS		16		
									ST	č	ĊŠ		16		
									0.	õ	ĊŠ		16		
			-						VP	oc	24				
	REACTOR VESSEI	L VENT LI	NE ISO	LATION VALVE T	O REFL	JELING C	AVITY								
2-RC-SV-2551A	11548-CBM-086B PRESSURIZER SA TANK		- +	····		1 SURIZER	C RELIEF		SP	0	60				
2-RC-SV-2551B	11548-CBM-086B PRESSURIZER SA TANK		- +	÷··· = · · ··· = · -		1 SURIZER	C RELIEF		SP	0	60				
2-RC-SV-2551C	11548-CBM-086B PRESSURIZER SA TANK					1 SURIZER	C RELIEF		SP	0	60				
2-RC-TV-2519A	11548-CBM-086B	2 OF 3	D-7	AO GATE	3	2	A (CIV	EV FS	C C	 03 03				
									LT	c	OPB				
									ST	č	03				
									VP	ŏč	24				
	PRIMARY GRADE FLUSH CONNECT,				SEAL S	TANDPIF	PES &								

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
2-RH-005	11548-CBM-087A	1 OF 2	E-5	CHECK VALVE	10	2	С	 CV	C O	CM CM				
	"B" RHR PUMP DI	SCHARGE	CHECK	VALVE					0	CIVI				
2-RH-011	11548-CBM-087A	1 OF 2	E-7	CHECK VALVE	10	2	С	 CV	C O	CM CM				
	"A" RHR PUMP DI	SCHARGE	CHECK	VALVE					0					
2-RH-047	11548-CBM-087A	2 OF 2	C-3	CHECK VALVE	10	1	С	 CV	c	CM				
	RHR DISCHARGE	TO LOOP	2 COLD	LEG CHECK VA	LVE				0	СМ				
2-RH-108	11548-CBM-087A RHR SUPPLY ISO CONTAINMENT IS	LATION T	O REFU		-		AE TSIDE	 LT	С	OPB			•	
2-RH-MOV-2700	11548-CBM-087A	1 OF 2	A-5	MO GATE	14	1	В	 EV ST VP	0 0 00	 RR RR 24			1 1	
	RHR PUMP SUPP	LY ISOLA	FION FR	OM RC LOOP 1 H	IOT LE	G		••	00					
2-RH-MOV-2701	11548-CBM-087A	1 OF 2	A-4	MO GATE	14	1	В	 EV ST VP	0 0 00	RR RR			1 1	
	RHR PUMP SUPP	LY ISOLA	FION FR	OM RC LOOP 1 H		G		VP	00	24				
2-RH-MOV-2720A	11548-CBM-087A	2 OF 2	C-3	MO GATE	10	2	В	 EV ST VP	0 0 00	RR RR 24			[·] 1 1	
	RHR RETURN ISO	LATION T	o "B" A0	COMULATOR D	ISCHAF	RGE LINE	1	VI	00	24				
2-RH-MOV-2720B	11548-CBM-087A	2 OF 2	B-3	MO GATE	10	1	В	 EV ST VP	0 0 00	RR RR 24			1 1	
	RHR RETURN ISO	LATION T	O "C" A	COMULATOR D	ISCHAF	RGE LINE	E	۷۳		24				
2-RH-RV-2721	11548-CBM-087A	2 OF 2	D-4	RELIEF VALVE	3	2	С	 SP	0	120				

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

VALVE NUMBER	DRAWING NUMBER	SHEET	COOF	VALVE R TYPE	 ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RL-003	11548-CBM-118A REFUELING PURII OUTSIDE CONT IS		FROM		 _	AE (,	CIV	LT	С	OPB				
 2-RL-005	11548-CBM-118A REFUELING PURI CONT ISOLATION	FICATION		MAN DIAPHRAG RP PUMPS TO F		AE (, INS		LT	С	OPB				
 2-RL-013	11548-CBM-118A REFUELING PURI CONT ISOLATION	FICATION		MAN DIAPHRAG	 2 P PUMPS			LT	С	OPB				
2-RL-015	11548-CBM-118A REFUELING PURII OUTSIDE CONT IS	FICATION	FROM		 -	AE 5,	CIV	LT	С	OPB				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-RM-003	11548-CBM-130B	1 OF 1	B- 5	CHECK VALVE	0.75	2	AC	CIV	CV LT	C O C	CM CM OPB				
	RETURN TO CONT			RADIATION MO	NITORIN	IG CABII	NET,		21	Ũ					
2-RM-TV-200A	11548-CBM-130B	1 OF 1	B-4	AO GATE	0.75	2	A	CIV	EV FS	C C	03 03				
									LT	č	OPB				
									ST	С	03				
					0 0 70 6			-	VP	OC	24				
	RETURN ISOLATIC OUTSIDE CONT IS			DIATION MONIT		ONTAIN	MENI	,							
2-RM-TV-200B	11548-CBM-130B	1 OF 1	F-8	AO GATE	0.75	2	A	CIV	EV	С	03				
									FS	С	03				
									LT ST	с с	OPB 03				
									VP	ŏč	24				
	SUPPLY ISOL TO A			R FROM CONTA		I VENT D	OUCT,								
2-RM-TV-200C	11548-CBM-130B	1 OF 1	E-8	AO GATE	0.75	2	A	CIV	EV	С	03				
									FS	c	03				
									LT ST	с с	OPB 03				
									VP	ŏ	24				
	SUPPLY ISOL TO A			R FROM CONTA		r vent d	OUCT,								

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SURRY UNIT 2 FIFTH INSERVICE TESTING INTERVAL VALVE INSERVICE TEST TABLE

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-RS-011	11548-CBM-084B	2 OF 2	E-5	CHECK VALVE	10	2	AC	CIV	CV	C O	CM CM				
	"B" OUTSIDE REC CHECK VALVE	IRC SPRA	Y PUMF	P INSIDE CONTAI	INMEN	I ISOLAT	ION		LT	С	OPB				·
2-RS-017	11548-CBM-084B	2 OF 2	D-5	CHECK VALVE	10	2	AC	CIV	CV	C O	CM CM				
	"A" OUTSIDE REC CHECK VALVE	IRC SPRA	Y PUMF	PINSIDE CONTAI	INMEN	I ISOLAT	ION		LT	č	OPB				
2-RS-132	11548-CBM-084B	1 OF 2	C-4	CHECK VALVE	3	2	AC		CV LT	C O C	CM CM 24				
	RECIRCULATION	SPRAY BL		NE CHECK VALV	E				LI	C	24				
2-RS-135	11548-CBM-084B	1 OF 2	C-6	CHECK VALVE	3	2	AC		CV	C O	CM CM				
	RECIRCULATION	SPRAY BL	EED LI		E				LT	č	24				
2-RS-MOV-255A	11548-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	В		EV	C	03				
									ST	0 C 0	03 03 03				
	"A" OUTSIDE REC CONTAINMENT SU		Y PUMF	SUCTION ISOL	ATION	VALVE FI	ROM		VP	õc	24				
2-RS-MOV-255B	11548-CBM-084B	2 OF 2	B-6	MO PLUG	12	2	В		EV	c	03 03				
									ST	0 C 0	03 03 03				
	"B" OUTSIDE REC CONTAINMENT SU		Y PUMF	SUCTION ISOL	ATION	VALVE FI	ROM		VP	õc	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RS-MOV-256A	11548-CBM-084B	2 OF 2	D-6	MO BFLY	10	2	A	CIV	ËV	C O	03 03				
									LT	c	OPB				
									ST	c	03				
									31	ŏ	03				
									VP	ŏ	24				
	CONTAINMENT IS	OLATION	VALVE												
2-RS-MOV-256B	11548-CBM-084B	2 OF 2	E-6	MO BFLY	10	2	Α	CIV	EV	С	03				
									. –	0	03				
									LT	c	OPB				
									ST	C	03				
										0	03				
	"A" OUTSIDE RECI	RC SPRA		ISCHARGE IS	SOLATIO	N, OUTS	IDE		VP	OC	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-RT-02	11548-CBM-124A STEAM GENERAT(VALVE	1 OF 4 OR RECIR	- · ·	MANUAL GLO ON INSIDE CO	 2 ENT ISOI		CIV N	LT	С	OPB				
2-RT-06	11548-CBM-124A STEAM GENERAT(VALVE	1 OF 4 OR RECIR	-	MANUAL BAI ON OUTSIDE	 2 MENT IS	AE OLAT	CIV ION	LT	С	OPB				
2-RT-21	11548-CBM-124A STEAM GENERATO VALVE		- · ·	MANUAL GLO ON INSIDE CO	 2 ENT ISOI		CIV N	LT	С	OPB				
2-RT-25	11548-CBM-124A STEAM GENERAT(VALVE	2 OF 4 OR RECIR		MANUAL BAI	 2 MENT IS	AE OLAT	CIV ION	LT	С	OPB				
2-RT-40	11548-CBM-124A STEAM GENERATO VALVE		- · ·		 2 ENT ISOL		CIV N	LT	С	OPB				
2-RT-44	11548-CBM-124A STEAM GENERATO VALVE	3 OF 4 OR RECIR		MANUAL BAI ON OUTSIDE	 2 MENT IS	AE OLAT		LT	С	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
2-SA-081	11548-CBM-075E SERVICE AIR SUP ISOLATION VALVE		B-6 NIT 1 CO	MAN GATE INTAINMENT, I	2 NSIDE C	2 ONTAIN	AE MENT	CIV	LT	С	OPB				
2-SA-082	11548-CBM-075E SERVICE AIR SUP ISOLATION VALVE		B-6 NIT 1 CO	MAN GATE NTAINMENT, (2 DUTSIDE	2 E CONTA	AE INMEJ	CIV NT	LT	С	OPB				

							ISO		_		REL	cs	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET COC	VALVE DR TYPE		ASME CLASS		VALVE	TEST TYPE	TEST POS	TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
2-SI-025	11548-CBM-089A	1 OF 3 E-5	CHECK VALVE	8	2	AC		CV	C O	CM CM				
	RWST SUPPLY C		O CHARGING PUM	P SUCT	ION HÉA	DER		LT	С	24	1			
2-SI-032	11548-CBM-089B ACCUMULATOR M			1 IMENT I		AE ON VAL		LΤ	С	OPB				
2-SI-046A	11548-CBM-089A	1 OF 3 A-3	CHECK VALVE	12	2	С		CV	C O	CM CM				
	RWST SUPPLY CH	HECK VALVE TO	O "A" LOW HEAD S	I PUMP	SUCTIO	N			0	OW				
2-SI-046B	11548-CBM-089A	1 OF 3 B-3	CHECK VALVE	12	2	С		CV	C O	CM CM				
	RWST SUPPLY CH	HECK VALVE TO	O "B" LOW HEAD S	I PUMP	SUCTIO	N			-	0				
2-SI-047	11548-CBM-089A	1 OF 3 B-5	CHECK VALVE	12	2	С		CV	C O	CM CM				
	"B" LOW HEAD SI	PUMP SUCTIO	N CHECK VALVE F	ROM CO	ONTAINM	IENT			Ū					
2-SI-050	11548-CBM-089A	1 OF 3 C-4	CHECK VALVE	10	2	С		CV	C O	CM CM				
	"B" LOW HEAD SI	PUMP DISCHA	RGE CHECK VALV	E					Ū	0				
2-SI-053	11548-CBM-089A	2 OF 3 B-4	CHECK VALVE	2	2	С		CV	C O	CM CM				
	"B" LOW HEAD SI	PUMP MINIMUI	M FLOW/TEST LINE	E DISCH	IARGE C	HECK			-	•				
2-SI-056	11548-CBM-089A	1 OF 3 B-7	CHECK VALVE	12	2	С		CV	C O	CM CM				
-	"A" LOW HEAD SI	PUMP SUCTIO	N CHECK VALVE F	ROM C	ONTAINN	IENT			Ū	C.I.I.				
2-SI-061	11548-CBM-089A	2 OF 3 B-5	CHECK VALVE	2	2	С		cv	C O	CM CM				
	"A" LOW HEAD SI		M FLOW/TEST LINE	E DISCH	IARGE C	HECK			Ŭ					
2-SI-073	11548-CBM-089A	2 OF 3 E-7	MAN GLOBE	0.75	2	AE	CIV	LT	С	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
	ACCUMULATOR T	EST LINE, OUTSI	DE CONTAINME	NT ISOL		/ALVE								
2-SI-079	11548-CBM-089B	4 OF 4 F-7	CHECK VALVE	E 6	1	AC	PIV	CV	C O C	CM CM 24				
	RCS COLD LEG S	ADMISSION CHE	CK VALVE					Li	C	24				
2-SI-082	11548-CBM-089B	4 OF 4 E-7	CHECK VALVE	E 6	1	AC	PIV	CV	C O C	CM CM 24				
	RCS COLD LEG SI	ADMISSION CHE	CK VALVE					LI	C	24				
2-S1-085	11548-CBM-089B	4 OF 4 D-7	CHECK VALVE	6	1	AC	PIV	CV	C O	CM CM				
	RCS COLD LEG SI	ADMISSION CHE	CK VALVE					LT	С	24				
2-SI-088	11548-CBM-089B	4 OF 4 D-7	CHECK VALVE	E 6	1	С		CV	C O	CM CM				
	RCS HOT LEG SI	ADMISSION CHEC	K VALVE											
2-SI-091	11548-CBM-089B	4 OF 4 B-7	CHECK VALVE	6	1	С		CV	C O	CM CM				
	RCS HOT LEG SI	ADMISSION CHEC	K VALVE											
2-SI-094	11548-CBM-089B	4 OF 4 C-7	CHECK VALVE	E 6	1	С		CV	C O	CM CM			- 4686888888	
	RCS HOT LEG SI A	ADMISSION CHEC	K VALVE						÷	0				
2-SI-107	11548-CBM-089B	1 OF 4 B-7	CHECK VALVE	E 12	1	С		CV	C O	CM CM				
	"A" ACCUMULATO	R DISCHARGE C	HECK VALVE						0					
2-SI-109	11548-CBM-089B	1 OF 4 B-8	CHECK VALVE	12	1	с		cv	C O	CM CM				
	"A" ACCUMULATO	R COLD LEG ADM	AISSION CHECK	VALVE					Ŭ					

									-		051	~~	~~	NO 11 T
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-128	11548-CBM-089B	2 OF 4	B-6	CHECK VALVE	12	1	С	CV	C O	СМ				
	"B" ACCUMULATO	RDISCHA	ARGE C	HECK VALVE					0	СМ				
2-SI-130	11548-CBM-089B	2 OF 4	B-7	CHECK VALVE	12	1	С	CV	C O	CM CM				
	"B" ACCUMULATO	R COLD L	EG ADN	AISSION CHECK	VALVE				0	CIVI				
2-SI-145	11548-CBM-089B	3 OF 4	B-5	CHECK VALVE	12	1	С	cv	C O	CM CM				
	"C" ACCUMULATO	R DISCHA	ARGE C	HECK VALVE					0	CIVI				
2-SI-147	11548-CBM-089B	3 OF 4	B-7	CHECK VALVE	12	1	С	CV	c	CM				
	"C" ACCUMULATO	R COLD L	EGAD	MISSION CHECK	VALVE				0	СМ				
2-SI-224	11548-CBM-089B	4 OF 4	F-3	CHECK VALVE	3	2	С	CV	C O	CM				
	HIGH HEAD SI FRO CONT CHECK VAL		GING P	UMPS TO RCS C	OLD LE	GS, INSI	DE		0	СМ				
2-SI-225	11548-CBM-089B	4 OF 4	E-3	CHECK VALVE	3	2	C	CV	C	CM				
	HIGH HEAD SI FRO CONT CHECK VAL		GING P	UMPS TO RCS C	OLD LE	egs, Insi	DE		0	СМ				
2-SI-226	11548-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	С	CV	с о	CM				
	HIGH HEAD SI FRO CHECK VALVE	OM CHAR	GING P	UMPS TO RCS H	OT LEG	GS, INSID	ECONT		U	СМ				
2-SI-227	11548-CBM-089B	4 OF 4	C-3	CHECK VALVE	3	2	С	CV	c	CM				
	HIGH HEAD SI FRO CHECK VALVE	OM CHAR	GING P	UMPS TO RCS H	OT LEG	GS, INSID	ECONT		0	СМ				
2-SI-228	11548-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	C	CV	с о	CM				
									0	СМ				

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				VAL		OLIV V		IADL					_	_
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-		NC ALT TEST VNC-
	LOW HEAD SI FRO VALVE	OM LHSI F	PUMP TO	O RCS HOT LEG	S, INSID	E CONT	СНЕСК							
2-SI-229	11548-CBM-089B	4 OF 4	B-3	CHECK VALVE	6	2	С	CV	C O	CM CM				
	LOW HEAD SI FRO VALVE	OM LHSI F	PUMP TO	O RCS HOT LEG	S, INSID	E CONT	CHECK		-					
2-SI-235	11548-CBM-089B	4 OF 4	F-7	CHECK VALVE	2	1	С	CV	C O	CM CM				
	HIGH HEAD SI TO	RCS COL	D LEG,	INSIDE MISSILE	BARRIE	ER CHEC	K VALVE		Ū	Civi				
2-SI-236	11548-CBM-089B	4 OF 4	E-7	CHECK VALVE	2	1	С	CV	C O	CM CM				
	HIGH HEAD SI TO	RCS COL	D LEG,	INSIDE MISSILE	BARRIE	ER CHEC	K VALVE		Ū	CIVI				
2-SI-237	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	2	1	С	CV	C O	CM CM				********
	HIGH HEAD SI TO	RCS COL	.D LEG,	INSIDE MISSILE	BARRIE	ER CHEC	K VALVE		Ũ	Civi				
2-SI-238	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	С	cv	C O	CM CM		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	LOW HEAD SAFET	TY INJECT	TION SU	IPPLY CHECK VA	LVE TO	RCS HC	OT LEG		Ũ	CIVI				
2-SI-239	11548-CBM-089B	4 OF 4	B-7	CHECK VALVE	6	1	С	CV	C O	CM CM				
	LOW HEAD SAFET	TY INJECT	TION SU	IPPLY CHECK VA	LVE TO	RCS HC	OT LEG		0	CIVI				
2-SI-240	11548-CBM-089B	4 OF 4	C-7	CHECK VALVE	6	1	C	CV	C O	CM CM				
	LOW HEAD SAFET	TY INJECT	TION SU	IPPLY CHECK VA	LVE TO	RCS HC	DT LEG		0	CIVI				
2-SI-241	11548-CBM-089B	4 OF 4	F-7	CHECK VALVE	6	1	AC PIV	CV	C O	CM CM				
								LT	C C	24				

VALVE	DRAWING			VALVE	VALVE	ASME	ISTC	ISO VALVE	TEST	TEST	TEST	REL REQ	CS JUST	RR JUST	NC ALT TEST
NUMBER	NUMBER	SHEET	COOR			CLASS			TYPE	POS	FREQ	V-	CSV-	RRV-	VNC-
2-SI-242	11548-CBM-089B	4 OF 4	E-7	CHECK VALVE	6	1	AC	PIV	CV	C	CM CM				
									LT	O C	24				
	LOW HEAD SI TO	RCS COLI	D LEG I	SOLATION CHEC	K VALV	Æ									
2-SI-243	11548-CBM-089B	4 OF 4	D-7	CHECK VALVE	6	1	AC	PIV	CV	C	СМ				
									LT	O C	CM 24				
	LOW HEAD SI TO	RCS COL	D LEG I	SOLATION CHEC	K VALV	Æ				0	24				
2-SI-304	11548-CBM-089B	1 OF 4	F-3	CHECK VALVE	1	2	AC	CIV	CV	С	СМ				
									LT	0 C	CM OPB				
	NITROGEN SUPPL		CUMULA	ATORS, INSIDE C	ONTAI	NMENT			2.	U	0, 5				
2-SI-327	11548-CBM-089A	1 OF 3	C-6	CHECK VALVE	10	2	С		CV	С	CM				
	"A" LOW HEAD SI	PUMP DIS	SCHARG	SE CHECK VALVE						0	СМ				
2-SI-400	11548-CBM-089A	1 OF 3	E-4	CHECK VALVE	10	2	С		cv	С	CM				
	RWST SUPPLY CH	IECK VAL	VE TO O	CHARGING PUMP	P SUCT	ION HEA	DER			0	СМ				
 2-SI-MOV-2842	11548-CBM-089A	3 OF 3	D-7	MO GATE	3	2	в		EV	C	CS		12		
									ST	o c	CS		12 12		
									51	Ö	CS CS		12		
									VP	oc	24				
	HIGH HEAD SI FRO VALVE	OM CHAR	GING H	EADER TO RCS	COLD L	EGS ISO	LATIC	N .							
2-SI-MOV-2860A	11548-CBM-089A	1 OF 3	B-7	MO GATE	12	2	В		EV	0	03				
									ST VP	O OC	03 24				
				SOLATION FROM					VF		24				

				••••								~~		
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-MOV-2860B	11548-CBM-089A	1 OF 3	B-5	MO GATE	12	2	В	EV ST VP	0 0 00	03 03 24				
	"B" LOW HEAD SI	PUMP SU	CTION IS	OLATION FRO	M CONT	AINMEN	T SUMP	•		- ·				
2-SI-MOV-2862A	11548-CBM-089A	1 OF 3	A-3	MO GATE	12	2	В	EV ST VP	C C OC	03 03 24				
	"A" LOW HEAD SI	PUMP SU	CTION F	ROM RWST				••						
2-SI-MOV-2862B	11548-CBM-089A	1 OF 3	B-3	MO GATE	12	2	B	EV ST VP	C C OC	03 03 24				
	"B" LOW HEAD SI	PUMP SU	CTION F	ROM RWST				••						
2-SI-MOV-2863A	11548-CBM-089A	2 OF 3	C-5	MO GATE	8	2	В	EV ST	С 0 С 0	03 03 03 03				
	"A" LOW HEAD SA CHARGING PUMP		ECTION F	PUMP SUPPLY	ISOLAT	ION TO		VP	OC	24				
2-SI-MOV-2863B	11548-CBM-089A	2 OF 3	D-3	MO GATE	8	2	В	EV ST	C 0 C 0	03 03 03 03				
	"B" LOW HEAD SA CHARGING PUMP	-	ECTION F	PUMP SUPPLY	ISOLAT	ION TO		VP	OC	24				
2-SI-MOV-2864A	11548-CBM-089A	2 OF 3	D-6	MO GATE	10	2	В	EV ST VP	C O C O OC	03 03 03 03 24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC AL TEST VNC-
	"A" LOW HEAD SI	PUMP CO	LD LEG [SCHARGE S	TOP VAL	VE								
2-SI-MOV-2864B	11548-CBM-089A	2 OF 3	D-4	MO GATE	10	2	В	EV	C O	03				
								ST	c o	03 03 03				
	"B" LOW HEAD SI	PUMP CO		SCHARGE S		VF		VP	õc	24				
2-SI-MOV-2865A	11548-CBM-089B	1 OF 4	C-7	MO GATE	12	2	В	EV	с о	CS CS		17 17		
								ST	С	CS		17		
								VP	0 OC	CS 24		17		
	"A" ACCUMULATO	R DISCHA	ARGE ISC	LATION VALV	E TO RC	S COLD	LEG							
2-SI-MOV-2865B	11548-CBM-089B	2 OF 4	C-6	MO GATE	12	2	В	EV	С	CS		17		
								ST	o c	CS CS		17 17		
								VP	0 00	CS 24		17		
	"B" ACCUMULATO	R DISCH	ARGE ISC	LATION VALV	/E TO RC	S COLD	LEG	¥1	00	27				
2-SI-MOV-2865C	11548-CBM-089B	3 OF 4	C-5	MO GATE	12	2	В	EV	С	CS		17		
								ST	O C	CS CS		17 17		
								VP	0 OC	CS 24		17		
	"C" ACCUMULATC	R DISCH	ARGE ISC	LATION VALV	/E TO RC	S COLD	LEG	VP	00	24				
2-SI-MOV-2867C	 11548-CBM-089A	3 OF 3	F-6	MO GATE	3	2	в	EV	с	CS		9		
								ST	o c	CS CS		9 9		
								-	0	CS		9		
	BORON INJECTIO						/ALVE	VP	oc	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SI-MOV-2867D	11548-CBM-089A	3 OF 3	E-6	MO GATE	3	2	В	EV ST	С О С О	CS CS CS		9 9 9		
								VP	õ	CS 24		9		
	BORON INJECTIO	N TANK O	UTLET T	O RCS COLD	LEG ISOI		/ALVE	••	•••					
2-SI-MOV-2869A	11548-CBM-089A	3 OF 3	C-7	MO GATE	3	2	В	EV	С	CS		12		
								от	0	CS		12		
								ST	C O	CS CS		12 12		
								VP	ŏc	24		12		
	HIGH HEAD SI FRO VALVE	OM CHAR	GING HE	ADER TO RCS	6 HOT LE	GS ISOL	ATION							
2-SI-MOV-2869B	11548-CBM-089A	3 OF 3	E-4	MO GATE	3	2	 В	EV	С	CS		12		
									0	CS		12		
								ST	C O	CS CS		12 12		
								VP	õ	24		12		
	HIGH HEAD SI FRO VALVE	OM CHAR	ging he	ADER TO RCS	HOT LE	GS ISOL	ATION							
 2-SI-MOV-2885A	11548-CBM-089A	2 OF 3	в-5	MO GATE	2	2	A	EV	С	03				
								LT	С	24	1			
	,	•						ST	C OC	03				
	"A" LOW HEAD SH	PUMP MI		LOW/TEST LIN	E ISOLA	TION		VP		24				
 2-SI-MOV-2885B	11548-CBM-089A	2 OF 3	 B-4	MO GATE	2	2	 A	EV	с	03				
		2 01 0	2 1		-	-		LT	č	24	1			
								ST	С	03				
	"B" LOW HEAD SI	PUMP MI		LOW/TEST LIN	E ISOLA	TION		VP	OC	24				
2.01.100/ 20050	14540 ODM 0004	2 05 2						 E\/						
2-31-MOV-2885C	11548-CBM-089A	2 OF 3	Б-4	MO GATE	2	2	Α	EV LT	с с	03 24	1			

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							ISO				REL	CS	RR	NC ALT
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISTC VALVE CAT TYPE	TEST TYPE		TEST FREQ	REQ V-	JUST CSV-	JUST	TEST VNC-
2-SI-MOV-2885C	11548-CBM-089A	2 OF 3	B-4	MO GATE	2	2	A	ST VP	C OC	03 24				
	"B" LOW HEAD SI	PUMP MI	NIMUM F	LOW/TEST LIN	E ISOLA	TION		•1	00	24				
2-SI-MOV-2885D	11548-CBM-089A	2 OF 3	B-5	MO GATE	2	2	A	EV	С	03				
								LT ST	C C	24 03	1			
								VP	õc	24				
	"A" LOW HEAD SI	PUMP MIN	NIMUM F	LOW/TEST LIN	E ISOLA	TION								
2-SI-MOV-2890A	11548-CBM-089A	2 OF 3	C-7	MO GATE	10	2	В	EV	С	CS		18		
								ST	o c	CS CS		18 18		
								0,	ŏ	ĊŚ		18		
								VP	OC	24				
	"A" LOW HEAD SI				JP 1500		₩LVE							
2-SI-MOV-2890B	11548-CBM-089A	2 OF 3	E-7	MO GATE	10	2	В	EV	С	CS		18		
								ST	o c	CS CS		18 18		
								01	ŏ	CS		18		
								VP	oc	24				
	"B" LOW HEAD SI	PUMP HO	T LEG D	ISCHARGE STO	OP ISOL	ATION V	ALVE							
2-SI-MOV-2890C	11548-CBM-089A	2 OF 3	D-7	MO GATE	10	2	В	EV	С	CS		8		
								07	0	CS		8		
								ST	C O	CS CS		8 8		
								VP	ŏ	24		o		
	LOW HEAD SI PU	MPS COLD	D LEG DI	SCHARGE STC	P ISOLA		LVE	••		2.				
2-SI-RV-2845A	11548-CBM-089A "A" LOW HEAD SI					2 ISCHAR(C SE TO	SP	0	120				
	SAFEGUARDS AR			LINGUILI VALV	L, NV D									
 2-SI-RV-2845B	11548-CBM-089A	2 OF 3	E-5		E1	2	c	SP	0	120				
				•										

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				VAL	VE IN	SERV	ICE	IES1	IAR					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	NC AL TEST VNC-
	LOW HEAD SI HEA SAFEGUARDS AF			EG RELIEF VALV	/E, RV D	DISCHAR	GE TO	5				·		
2-SI-RV-2845C	11548-CBM-089A "B" LOW HEAD SI SAFEGUARDS AR	PUMP DIS	SCHARG			2 ISCHARC	C GE TO		SP	0	120			
2-SI-RV-2858A	11548-CBM-089B SI ACCUMULATO			RELIEF VALVE	1	2	С		SP	0	120			
2-SI-RV-2858B	11548-CBM-089B SI ACCUMULATO			RELIEF VALVE	1	2	c		SP	0	120			
2-SI-RV-2858C	11548-CBM-089B SI ACCUMULATO			RELIEF VALVE	1	2	С		SP	0	120			
2-SI-RV-2859	11548-CBM-089B SI ACCUMULATO			RELIEF VALVE EF VALVE	0.75	2	С		SP	0	120	NOTE 2		
2-SI-TV-200	11548-CBM-089A	3 OF 3	B-7	AO GATE	1	2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24			
	NITROGEN SUPP		CUMULA	TORS, OUTSIDI	ECONT	AINMEN'	Т		••	00	24			
2-SI-TV-201A	11548-CBM-089B	1 OF 4	C-3	AO GATE	1	2	A	CIV	EV FS LT ST	0000	03 03 OPB 03 24			
	ACCUMULATORS CONTAINMENT IS			CHARCOAL FILT	ers, in	SIDE			VP	OC	24			
2-SI-TV-201B	11548-CBM-089B	1 OF 4	B-2	AO GATE	1	2		CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24			
						A 7'	4							

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
	ACCUMULATORS CONTAINMENT IS			HARCOAL FIL	TERS, O	UTSIDE								
 2-SI-TV-202A	11548-CBM-089A	1 OF 3	E-7	AO GATE	8	2	В	EV FS ST VP	0 0 0 00	03 03 03 24				
	UNIT 1 RWST TO I	UNIT 2 RV	VST CROS	SS TIE				•1	00	- 1				
2-SI-TV-202B	11548-CBM-089A	1 OF 3		AO GATE	8	2	B	EV FS ST VP	0 0 0 00	03 03 03 24				
	UNIT 1 RWST TO I													

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SS-TV-200A	11548-CBM-082A	2 OF 3		SO GATE	0.375		A	CIV	EV FS LT ST VP	с сс сс ос	03 03 OPB 03 24				
	PRESSURIZER LIC		CE SAMF	PLE LINE, INSI	DE CONT	AINMER	[]								
2-SS-TV-200B	11548-CBM-082A	2 OF 3	F-6	AO GATE	0.375	5 1	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24				
	PRESSURIZER LIC		CE SAMF	PLE LINE, OUT	SIDE CO	NTAINM	ENT								
2-SS-TV-201A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	PRESSURIZER VA		CE SAMI	PLE LINE, INSI		TAINME	T		•••	00	2.				
2-SS-TV-201B	11548-CBM-082A	2 OF 3	E-6	AO GATE	0.375	5 1	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	PRESSURIZER VA		CE SAM	PLE LINE, OUT	SIDE CO	NTAINN	ENT								
2-SS-TV-202A	11548-CBM-082A	2 OF 3	D-7	SO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE		TEST FREQ	REL REQ V-	CS JUST CSV-	rr Just Rrv-	NC ALT TEST VNC-
	REACTOR COOLA ISOLATION VALVE		LEGS SA	MPLE HEADE	R, INSID	E CONT/	AINME	NT							
2-SS-TV-202B	11548-CBM-082A	2 OF 3	D-6	SO GATE	0.37	5 1	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	REACTOR COOLA CONTAINMENT IS			MPLE HEADE	R, OUTS	IDE									
2-SS-TV-203A	11548-CBM-082A	2 OF 3	F-7	SO GATE	0.37	5 2	AE	CIV	LT VP	C OC	OPB 24				
	RHR SAMPLE HEA	ADER, INS	IDE CONT	FAINMENT ISC	DLATION	VALVE									
2-SS-TV-203B	11548-CBM-082A	2 OF 3	F-6	SO GATE	0.375	5 2	AE	CIV	LT VP	C OC	OPB 24				
	RHR SAMPLE HEA	ADER, OU	TSIDE CO	NTAINMENT I	SOLATIO	ON VALV	E								
2-SS-TV-204A	11548-CBM-082A	2 OF 3	C-7	SO GATE	0.37	5 2	A	CIV	EV FS LT ST VP	C C C C C OC	03 03 OPB 03 24				
	PRESSURIZER RE CONTAINMENT IS			PACE SAMPLÉ	LINE, IN	ISIDE			VI	00	27				
2-SS-TV-204B	11548-CBM-082A	2 OF 3	C-6	AO GATE	0.37	5 2	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24				
	PRESSURIZER RE CONTAINMENT IS			PACE SAMPLE	LINE, O	UTSIDE									
2-SS-TV-206A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.37	5 1	A	CIV	EV FS LT	C C C	03 03 OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS		ISO VALVE TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SS-TV-206A	11548-CBM-082A	2 OF 3	E-7	SO GATE	0.375	j 1	A	CIV	ST VP	C OC	03 24				
	REACTOR COOLA		EGS SAN	PLE HEADER	R, INSIDE	CONTAI	NMEN	IT							
2-SS-TV-206B	11548-CBM-082A	2 OF 3	E-6	SO GATE	0.375	5 1	A	CIV	EV FS LT ST VP	C C C C C C C C C	03 03 OPB 03 24				
	REACTOR COOLA		EGS SAN	IPLE HEADER	R, OUTSIE										

garan a

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	 ASME CLASS	 	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SV-TV-202A	11548-CBM-066A CONDENSER AIR CONTAINMENT IS		L DISCHA VALVE	AO GATE	·	CIV	EV FS LT ST VP	C C C C OC	03 03 OPB 03 24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-043	11548-CBM-071A SERVICE WATER ISOLATION VALVE	OUTLET L		BUTTERFLY OM BC WATER		NC UAL	В		EV	С	24				
2-SW-048	11548-CBM-071A SERVICE WATER ISOLATION VALVE	OUTLET L		BUTTERFLY OM BC WATER		NC UAL	В		EV	С	24				
2-SW-052	11548-CBM-071A SERVICE WATER ISOLATION VALVE	OUTLET L		BUTTERFLY OM BC WATER		NC UAL	В		EV	С	24				
2-SW-108	11548-CBM-071B CHARGING PUMP					3	С		CV	C O	CM CM				
2-SW-113	11548-CBM-071B CHARGING PUMP			CHECK VALVE		3	с		CV	C O	CM CM				
2-SW-206	11548-CBM-071A CONTAINMENT IS EXCHANGER			MAN GATE FOR SERVICE V	2 VATER [_	AE TO HEA		LT	С	OPB				
2-SW-208	11548-CBM-071A CONTAINMENT IS EXCHANGER				2 VATER [2 DRAINS 1	AE TO HEA	÷••	LT	С	OPB				
2-SW-246	11548-CBM-071A RECIRCULATION VENT VALVE					3 TER RET	C URN		CV	C O	CM CM				
2-SW-247	11548-CBM-071A RECIRCULATION VENT VALVE					3 TER SUF	C PPLY		CV	C O	CM CM				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-248	11548-CBM-071A	3 OF 3	C-7	CHECK VALVE	3	3	С	CV	C O	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	ICE WA	TER RET	URN							
2-SW-249	11548-CBM-071A	3 OF 3	D-6	CHECK VALVE	3	3	С	CV	C O	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	ICE WA	TER SUF	PLY		U	0 M				
2-SW-250	11548-CBM-071A	3 OF 3	C-6	CHECK VALVE	3	3	С	CV	C O	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	CE WA	TER RET	URN		U	0111				
2-SW-251	11548-CBM-071A	3 OF 3	D-6	CHECK VALVE	3	3	C	CV	C	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	ICE WA	TER SUP	PLY		0	CIM				
2-SW-252	11548-CBM-071A	3 OF 3	C-5	CHECK VALVE	3	3	С	CV	C O	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	ICE WA	TER RET	URN		0	CIVI				
2-SW-253	11548-CBM-071A	3 OF 3	D-5	CHECK VALVE	3	3	C	CV	C O	CM CM				
	RECIRCULATION	SPRAY HE	EAT EXC	HANGER SERV	ICE WA	TER SUF	PLY		0	Civi				
2-SW-442	11548-CBM-071B	1 OF 2	B-4	CHECK VALVE	2	3	С	cv	C O	CM CM				
	CHARGING PUMP	SERVICE	WATEF	R PUMP DISCHAI	RGE CH	IECK VA	LVE		U	CIVI				
2-SW-445	11548-CBM-071B	1 OF 2	B-6	CHECK VALVE	2	3	C	CV	C	CM CM				
	CHARGING PUMP	SERVICE	WATEF	R PUMP DISCHAI	RGE C⊦	IECK VA	LVE		0					

				VAL		JLNV		IADLI	-					
VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-201A	11548-CBM-071A	3 OF 3	B-4	MO BFLY	36	3	В	EV ST VP	C C OC	03 03 24				
	BEARING COOLIN	G WATER	HEAT EX	CHANGER IS	OLATIO	N VALVE		••	00	-				
2-SW-MOV-201B	11548-CBM-071A	3 OF 3	B-4	MO BFLY	36	3	В	EV ST VP	C C OC	03 03 24				
	BEARING COOLIN	G WATER	HEAT EX	CHANGER IS	OLATIO	N VALVE		VF	00	24				
2-SW-MOV-202A	11548-CBM-071A	2 OF 3	D-6	MO BFLY	42	3	В	EV ST VP	C C OC	03 03 24				
	SERVICE WATER HEAT EXCHANGE		SUPPLY I	SOLATION TO	COMPC	DNENT C	OOLING							
2-SW-MOV-202B	11548-CBM-071A	2 OF 3	D-5	MO BFLY	42	3	В	EV ST VP	C C OC	03 03 24				
	SERVICE WATER HEAT EXCHANGE		SUPPLY I	SOLATION TO	COMPC	ONENT C	OOLING	۷P	00	24				
2-SW-MOV-203A	11548-CBM-071A	3 OF 3	B-8	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY I	SOLATION TO	RECIRC	SPRAY	HEAT	vi	00	24				
2-SW-MOV-203B	11548-CBM-071A	3 OF 3	B-8	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER EXCHANGERS	HEADER	SUPPLY I	SOLATION TO	RECIRC	SPRAY	HEAT	VF	00	27				
2-SW-MOV-203C	11548-CBM-071A	3 OF 3	B-3	MO BFLY	30	. 3	В	EV ST VP	0 0 00	RR RR 24			2 2	
	SERVICE WATER	HEADER	SUPPLY I	SOLATION TO) RECIRC	SPRAY	HEAT	vr	00	24				

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-203D	11548-CBM-071A	3 OF 3	B-3	MO BFLY	30	3	В	EV ST VP	0 0 00	RR RR 24			2 2	:
	SERVICE WATER	HEADER	SUPPLY I	SOLATION TO	RECIRC	C SPRAY	HEAT							
2-SW-MOV-204A	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	В	EV	C O	RR RR			2 2	
								ST	C O	RR RR			2 2	
	SERVICE WATER			CIRC SPRAY	HEAT EX	CHANGE	ER,	VP	OC	24				
2-SW-MOV-204B	11548-CBM-071A	3 OF 3	D-6	MO BFLY	24	3	В	EV	C O	RR RR			2 2	
								ST	C O	RR			2	
	SERVICE WATER			CIRC SPRAY	HEAT EX	CHANG	ER,	VP	oc	24			2	
2-SW-MOV-204C	11548-CBM-071A	3 OF 3	D-5	MO BFLY	24	3	в	EV	С	RR			2	
								ST	0 C 0	RR RR RR			2 2 2	
	SERVICE WATER			CIRC SPRAY	HEAT EX	CHANGI	ER,	VP	OC	24				
2-SW-MOV-204D	11548-CBM-071A	3 OF 3	D-4	MO BFLY	24	3	В	EV	C O	RR RR			2 2	
								ST	C O	RR RR			2 2	
	SERVICE WATER			CIRC SPRAY	HEAT EX	(CHANGI	ER,	VP	OC	24				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE			ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-MOV-205A	11548-CBM-071A	3 OF 3	D-8	MO BFLY	24	3	В	EV ST	с о с о	RR RR RR RR RR			2 2 2 2 2	
	SERVICE WATER			RECIRC SPR	AY HEA	T EXCHA	NGER,	VP	OC	24				
2-SW-MOV-205B	11548-CBM-071A	3 OF 3	D-7	MO BFLY	24	3	В	EV ST	C O C	RR RR RR			2 2 2 2	
								VP	0 00	RR 24			2	
	SERVICE WATER			RECIRC SPR	AY HEA	F EXCHA	NGER,							
2-SW-MOV-205C	11548-CBM-071A	3 OF 3	D-6	MO BFLY	24	3	В	EV	C O	RR RR			2 2	
								ST	č	RR RR			22	
	SERVICE WATER			RECIRC SPR	AY HEA	T EXCHA	NGER,	VP	OC	24				
2-SW-MOV-205D	11548-CBM-071A	3 OF 3	D-5	MO BFLY	24	3	В	EV	C O	RR			2	
								ST	0 C O	RR RR RR			2 2 2	
	SERVICE WATER			RECIRC SPR	XAY HEA	T EXCHA	NGER,	VP	OC	24				
2-SW-TCV-208A	11548-CBM-071B	1 OF 2	E-7	AO GATE	1.5	3	В	EV FS ST	0 0 0	03 03 NA	NOTE 1			
	SERVICE WATER	TO CHAR	ging Pui	MP LUBE OIL	COOLER	TEMPER	RATURE	31	U		NOTET			

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE	-	-	ISO ISTC VALVE CAT TYPE	TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-SW-TCV-208B	11548-CBM-071B	1 OF 2	E-5	AO GATE	1.5	3	В	EV FS ST	0 0	03 03 NA	NOTE 1			
	SERVICE WATER	TO CHAR	ging pui	MP LUBE OIL	COOLER	TEMPE	RATURE	• •	-					
2-SW-TCV-208C	11548-CBM-071B	1 OF 2	E-4	AO GATE	1.5	3	В	EV FS ST	0 0 0	03 03 NA	N OTE 1			
	SERVICE WATER	TO CHAR	ging pui	MP LUBE OIL	COOLER	TEMPE	RATURE		-					

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VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VA-001	11548-CBM-083B VENT LINE FROM VALVE	3 OF 3 PRIMARY		MAN GATE OT, OUTSIDE (2 CONTAIN	2 IMENT IS	AE SOLAT	CIV ION	LT	С	OPB				
 2-VA-009	11548-CBM-083B VENT LINE FROM VALVE	3 OF 3 PRIMARY	• •	MAN GATE OT, INSIDE CO	2 NTAINM	2 ENT ISO	AE LATIO	CIV N	LT	С	OPB				

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VG-TV-209A	11548-CBM-083B	1 OF 3	E-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	С С С С ОС	03 03 0PB 03 24		· ,		
	VENT LINE ISOL F			AINS TRANSF	ER TANI	K TO GAS	3								
2-VG-TV-209B	11548-CBM-083A	2 OF 2	F-3	AO GATE	2	2	A	CIV	EV FS LT ST VP	C C C C C C C C	03 03 OPB 03 24				
	VENT LINE ISOL FI STRIPPERS, OUTS				ER TANI	K TO GAS	\$								

2-VP-12 11548-CBM-066A 2 OF 3 F-4 CHECK VALVE 6 2 AC CIV CV C CM O CM LT C OPB	NUMBER	DRAWING NUMBER SHEE	T COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REQ V-	JUST CSV-	JUST RRV-	TEST VNC-
LT C OPB	2-VP-12	11548-CBM-066A 2 OF	3 F-4	CHECK VALVE	6	2	AC	CIV	cv	C O					
CONDENSER AIR REMOVAL DISCHARG TO CONTAINMENT INSIDE									LT	č					
CONTAIN ISOLATION CHECK VALVE					INMEN	T INSIDE									

VALVE NUMBER	DRAWING NUMBER	SHEET	COOR	VALVE TYPE		ASME CLASS			TEST TYPE	TEST POS	TEST FREQ	REL REQ V-	CS JUST CSV-	RR JUST RRV-	NC ALT TEST VNC-
2-VS-MOV-200A	11548-CBB-006A CONTAINMENT PU	1 OF 2 JRGE SUF			36 MENT IS	2 OLATIO			LT VP	C OC	OPB 24				
2-VS-MOV-200B	11548-CBB-006A	1 OF 2	C-8	MO BFLY	36	2	AE	CIV	LT VP	C OC	OPB 24				
2-VS-MOV-200C	11548-CBB-006A CONTAINMENT Pl	1 OF 2 JRGE EXH		MO BFLY	36 NMENT	2 ISOLATIO	AE DN V		LT VP	C OC	OPB 24				
2-VS-MOV-200D	11548-CBB-006A CONTAINMENT PL	1 OF 2 JRGE EXH		MO BFLY UTSIDE CONT	36 AINMEN	2 T ISOLA		CIV	LT VP	C OC	OPB 24				
2-VS-MOV-201	11548-CBB-006A CONTAINMENT PL	1 OF 2 JRGE BYF		MO BFLY	8 INMENT	2 ISOLATI	AE ON	CIV	LT VP	C OC	OPB 24				
2-VS-MOV-202	11548-CBB-006A CONTAINMENT VA	1 OF 2 ACUUM BI		MO BFLY	18	2	AE	CIV	LT VP	C OC	OPB 24				

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VALVE INSERVICE TEST TABLE NOTES

NOTE 1

The ASME OM Code, ISTC 5100, describes the exemption of stroke-time testing for power operated control valves whose only safety function is to fail in the safety direction. ISTC 5100 states:

"All valves shall be tested in accordance with the applicable requirements of ISTC-3000, and as identified below, except for power-operated control valves that only have a fail-safe safety function.

For power-operated control valves that only have a fail-safe safety function, the requirements for valve stroke-time measurement testing, the associated stroke-time test acceptance criteria, and any corrective actions that would result from stroke-time testing need not be met. For these valves, all other applicable requirements of ISTC-3000, and as identified below, shall be met".

The power-operated control valves listed in Table 1 have only a failsafe function. The ASME OM Code as described in ISTC 5100 will be applied to the control valves listed in Table 1. ISTC 5100 has replaced Code Case OMN-8 in the 2004 Edition, 2006 Addenda.

NOTE 1 (Cont.)

Table 1

Valve Number	System	OM Category	ASME Class	Function
2-CC-LCV-201	Component Cooling	В	. 3	Charging Pump Seal Cooling Surge Tank Level Control Valve
2-CH-FCV-2113A	Chemical and Volume Control	В	2	Alternate Emergency Boration Line Flow Control Valve
2-CH-FCV-2114A	Chemical and Volume Control	В	2	Primary Grade Water Flow Control Valve
2-MS-RV-201A 2-MS-RV-201B 2-MS-RV-201C	Main Steam	В	2	Main Steam Header Discharge to Atmosphere Pressure Control Valves
2-SW-TCV-208A 2-SW-TCV-208B 2-SW-TCV-208C	Service Water	В	3	Service Water to Charging Pump Lube Oil Cooler Temperature Control Valves

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NOTE 2

The ASME OM Code, Appendix I, I-1200, Definitions, defines a thermal relief application as:

"a relief device whose only overpressure protection function is to protect isolated components, systems, or portions of systems from fluid expansion caused by changes in fluid temperature."

According to Appendix I, I-1390, Test Frequency, Classes 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application:

"Tests shall be performed on all Class 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

The valves listed in Table 2 serve a thermal relief application and will be tested in accordance with I-1390.

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NOTE 2 (Cont.)

Table 2

Thermal Relief	ASME Code	
Valve Number	Class	Function
2-CC-RV-212A 2-CC-RV-212B 2-CC-RV-212C	3	These relief valves protect the CC piping and components related to the recirculation air cooler from over-pressure in the event of an accident requiring isolation of this line (non-safety function). They also protect the piping associated with containment penetrations 9 through 14.
2-CC-RV-216A 2-CC-RV-216B 2-CC-RV-216C	3	These relief valves protect the CC piping that supplies cooling water to the RCP thermal barrier heat exchangers from over-pressure in the event of an inadvertent actuation of the downstream trip valve. Thermal loads could cause the pressure in the isolated CC piping to increase past the design limit of the pressure boundary.
2-CC-RV-219A 2-CC-RV-219B	3	These relief valves open to protect the RHR heat exchangers from over-pressurization while the heat exchangers are isolated within the containment structure. During an accident, the temperature increase in containment could cause the water in the heat exchanger to expand resulting in a significant increase in pressure with the potential for damage.
2-CC-RV-224	3	The primary function of this relief valve is to protect the piping and cooling coils related to cooling of the pedestals and primary shield from over-pressure in the event they are isolated and subjected to thermal expansion. During a LOCA this section of CC piping is isolated and will be subjected to heating. If such an event should occur, the piping associated with penetrations Nos. 1 & 5 could be subjected to an overpressure condition thus jeopardizing containment integrity.
2-CC-RV-238A 2-CC-RV-238B 2-CC-RV-238C	3	These relief valves open to protect the CC piping and shroud cooling coils from over-pressure in the event of thermal heating when the CC lines are isolated (TV-105 (205) closed).

NOTE 2 (Cont.)

Table 2

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Thermal Relief Valve Number	ASME Code Class	Function
2-SI-RV-2859	2	This relief valve is on the SI accumulator test line and protects penetration 106.

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4.5 VALVE TEST PROGRAM RELIEF REQUEST

Relief Requests identify code requirements that are impractical for Surry Unit 2 and provide justification for the requested exception. Where appropriate, alternate testing to be performed in lieu of code requirements is proposed.

RELIEF REQUEST V-1

Proposed alternative in accordance with 10CFR50.55a(a)(3)(i) Alternative provides acceptable level of quality and safety.

1.0 ASME Code Components Affected

Valve(s): 2-CH-MOV-2115B	2-SI-MOV-2885A
2-CH-MOV-2115D	2-SI-MOV-2885B
2-SI-25	2-SI-MOV-2885C
	2-SI-MOV-2885D

System: Chemical and Volume Control and Safety Injection

Category: A for 2-CH-MOV-2115B and D, and 2-SI-MOV-2885A-D AC for 1-SI-25

Class: 2

Function: RWST Isolation Valves

2.0 Applicable Code Edition and Addenda

ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

3.0 Applicable Code Requirements

ISTC-3630(f) - Valves or valve combinations with leakage rates exceeding the values specified by the Owner in ISTC-3630(e) above shall be declared inoperable and be either repaired or replaced.

4.0 Reason for Request

Valves 2-CH-MOV-2115B and D, and 2-SI-25 are in the supply line to the charging pumps from the RWST. Valves 2-SI-MOV-2885A, B, C and D are on test lines that run from the discharge of the low head SI pumps to the RWST. During recirculation mode transfer, the RWST is isolated and the low head SI pumps recirculate highly contaminated water from the containment sump to the reactor vessel.

RELIEF REQUEST V-1 (Cont.)

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

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

5.0 Proposed Alternatives and Bases for Use

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

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

RELIEF REQUEST V-1 (Cont.)

6.0 Duration of the Proposed Alternative

The proposed alternatives described in Relief Request V-1 will be used for the Surry Power Station Unit 2 Fifth Ten Year Inservice Testing Interval.

7.0 Precedents

A similar relief request for the Surry Unit 2 Fourth Ten Year Inservice Testing Interval was approved by the NRC in their safety evaluation entitled "Surry Power Station, Units 1 and 2 – American Society of Mechanical Engineers Inservice Testing Program (TAC NOS. MC0120 through MC0146)" dated July 2, 2004.

The following relief request for another plant that is similar to V-1 was approved by the NRC.

Pump Relief Request V-1 for North Anna 1 was approved by the NRC by letter dated 9/30/2010 (TAC NOS. ME2748, ME2749, ME2753 to ME2760, ME2763 to ME2772, ME2778 to ME2789).

8.0 <u>References</u>

1. ASME OM Code, 2004 Edition, 2005 and 2006 Addenda

4.6 VALVE TEST PROGRAM COLD SHUTDOWN JUSTIFICATIONS

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

ISTC-9200 does require that 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.

System: Main Steam

Valve(s): 2-MS-TV-201A 2-MS-TV-201B 2-MS-TV-201C

Category: B

Class: 2

Function: Main Steam Line Trip Valves

Cold Shutdown Justification

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

Testing Frequency

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

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

The Code requires the measurement of elapsed time from initiation of steam line isolation to full valve closure, which is a less conservative test.

System: Component Cooling

Valve(s): 2-CC-TV-205A 2-CC-TV-205B 2-CC-TV-205C

Category: B

Class: 3

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

Cold Shutdown Justification

Exercising valves 2-CC-TV-205A, B and C during normal operation would isolate the reactor coolant pump (RCP) component cooling water return headers. These headers collect cooling water from the RCP upper and lower bearing lube oil coolers, the shroud cooling coils and the stator coolers. Loss of cooling water to these pumps can be damaging, even for short periods of time. Therefore, the corresponding RCP must be secured before the header isolation trip valve is exercised. The valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

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

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System: Reactor Coolant

Valve(s): 2-RC-PCV-2455C 2-RC-PCV-2456

Category: BC

Class: 1

Function: Pressurizer Power Operated Relief Valves

Cold Shutdown Justification

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

Testing Frequency

These valves will be tested on approach to Cold Shutdown.

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System: Chemical and Volume Control

Valve(s): 2-CH-MOV-2115C 2-CH-MOV-2115E

Category: B

Class: 2

Function: Charging Pump Suction from Volume Control Tanks

Cold Shutdown Justification

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

Testing Frequency

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

System: Chemical and Volume Control

Valve(s): 2-CH-MOV-2381

Category: A

Class: 2

Function: Reactor Coolant Pump Seal Water Return

Cold Shutdown Justification:

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

Testing Frequency

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

System: Chemical and Volume Control

Valve(s):	2-CH-TV-2204A	2-CH-LCV-2460A
	2-CH-TV-2204B	2-CH-LCV-2460B

Category: A (2-CH-TV-2204A, B) and B (2-CH-LCV-2460A, B)

Class: 1 (2-CH-LCV-2460A, B) and 2 (2-CH-TV-2204A, B)

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

Cold Shutdown Justification

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

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

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

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

Testing Frequency

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

System: Chemical and Volume Control

Valve(s): 2-CH-MOV-2289A 2-CH-MOV-2289B

Category: B

Class: 2

Function: Normal Charging Header Isolation

Cold Shutdown Justification

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

Testing Frequency

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

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System: Safety Injection

Valve(s): 2-SI-MOV-2890C

Category: B

Class: 2

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

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.3, two safety injection subsystems, which include one operable low head safety injection pump, must be operable when the reactor is critical. If this valve was stroked during power operation and failed in the close position, the Low Head Safety Injection System would be rendered inoperable.

Testing Frequency

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

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System: Safety Injection

Valve(s): 2-SI-MOV-2867C 2-SI-MOV-2867D

Category: B

Class: 2

Function: High Head Safety Injection Isolation

Cold Shutdown Justification

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

Testing Frequency

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

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System: Chemical and Volume Control

Valve(s): 2-CH-MOV-2350

Category: B

Class: 2

Function: Emergency and Manual Emergency Boration Line Isolation Valve

Cold Shutdown Justification

Valve 2-CH-MOV-2350 can be full stroke exercised during normal operation when the boric acid concentration in the reactor coolant system is above 100 ppm. During power operation when the concentration of boric acid is low, the addition of boric acid will produce an undesirable transient in reactor power. Low concentrations of boric acid occur near the end of the fuel cycle. The valve controller does not allow for part stroke exercising.

Testing Frequency

Valve 2-CH-MOV-2350 will be full stroke exercised during normal operation when the reactor coolant boric acid concentration is above 100 ppm.

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System: Steam Generator Blowdown

Valve(s):	2-BD-TV-200A	2-BD-TV-200D
	2-BD-TV-200B	2-BD-TV-200E
	2-BD-TV-200C	2-BD-TV-200F

Category: B

Class: 2

Function: Steam Generator Blowdown Isolation

Cold Shutdown Justification

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

Testing Frequency

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

System: Safety Injection

Valve(s): 2-SI-MOV-2842 2-SI-MOV-2869A 2-SI-MOV-2869B

Category: B

Class: 2

Function: High Head Safety Injection to reactor Coolant System

Cold Shutdown Justification

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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.

Testing Frequency

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

System: Component Cooling

Valve(s): 2-CC-TV-220A 2-CC-TV-240A 2-CC-TV-220B 2-CC-TV-240B 2-CC-TV-220C

Category: B

Class: 3

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

Cold Shutdown Justification

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

Testing Frequency

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

System: Feedwater

Valve(s):	2-FW-FCV-2478	2-FW-HCV-255A
	2-FW-FCV-2488	2-FW-HCV-255B
	2-FW-FCV-2498	2-FW-HCV-255C

Category: B

Class: NC

Function: Main Feedwater Regulating and Regulating Bypass Isolation Valves

Cold Shutdown Justification

These valves are in positions required to sustain power operation. Full stroke exercising the valves would result in a reactor trip. The main feedwater regulating valves 2-FW-FCV-2478, 2488 and 2498 move during normal operation as they perform their regulating function. In order to perform a partial stroke test during normal operation, the plant would have to reduce power to cause the valve disks to move. Reducing power for the purpose of performing an exercise test is considered impractical according to the NRC response to Comment 2.4.5-1 in NUREG-1482, Revision 0, Appendix G. Appendix G was omitted from NUREG-1482, Revision 1, along with Comment 2.4.5-1. However, IST Engineering still considers reducing power for the purpose of performing an exercise.

The bypass valves 2-FW-HCV-255A, B and C are used only during plant startup. During this startup period, their safety function is to close. During normal operation, these valves remain closed and are passive in the close position. Therefore, the bypass valves do not need to be partial stroke tested every three months.

Testing Frequency

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

System: Component Cooling

Valve(s): 2-CC-LCV-201

Category: B

Class: 3

Function: Charging Pump Seal Cooling Surge Tank Level Control Valve

Cold Shutdown Justification

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

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

Testing Frequency

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

System: Reactor Coolant

Valve(s): 2-RC-SOV-200A-1 2-RC-SOV-200A-2 2-RC-SOV-200B-1 2-RC-SOV-200B-2

Category: B

Class: 1

Function: Head Vent for Reactor Vessel

Cold Shutdown Justification

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

Testing Frequency

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

System: Safety Injection

Valve(s): 2-SI-MOV-2865A 2-SI-MOV-2865B 2-SI-MOV-2865C

Category: B

Class: 2

Function: Accumulator Discharge Isolation Valves to RCS Cold Leg

Cold Shutdown Justification

In accordance with Technical Specification 3.3.A.2.d, the accumulator discharge isolation valves 1-SI-MOV-1865A, B and C shall be blocked open by de-energizing the valve motor operators when the reactor coolant system pressure is greater than 1000 psig. These valves could be called upon to close when the reactor coolant system pressure is less than 1000 psig. If these valves were stroked during power operation and failed in the close position, the corresponding accumulator would be rendered inoperable and thus decrease plant safety. Also, the valve controllers do not allow for a part-stroke exercise test.

Testing Frequency

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

System: Safety Injection

Valve(s): 2-SI-MOV-2890A 2-SI-MOV-2890B

Category: B

Class: 2

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

Cold Shutdown Justification

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

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

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

COLD SHUTDOWN JUSTIFICATION CSV-18 (Cont.)

Testing Frequency

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

System : Circulating Water

Valve(s): 2-CW-MOV-200A	2-CW-MOV-206A
2-CW-MOV-200B	2-CW-MOV-206B
2-CW-MO\/-200C	2-CW-MOV-206C
2-CW-MOV-200D	2-CW-MOV-206D

Category: B

Class: 3 (2-CW-MOV-206A to 206D) and NC (2-CW-MOV-200A to 200D)

Function: Main condenser outlet/inlet isolation valves

Cold Shutdown Justification

During plant operation these valves are open to provide for the circulation of cooling water (river water) through the main condenser. These valves can be full stroke exercised during normal operation. However, when the circulating water is above 80 F, exercising the valves to the closed position will result in a reduction of condenser vacuum and loss of MWe, and may cause the operators to ramp the unit down during the test.

Due to the recent turbine upgrade, there is reduced margin with condenser vacuum. Therefore, there is a possibility that the unit must ramp down to test these valves when the circulating water temperature is above 80 F. Prior to the turbine upgrade, the unit lost about 10 MWe when testing these valves at elevated circulating water temperatures during the summer time. With the turbine upgrade, the unit will lose greater than 20 MWe. Additionally, the loss of vacuum may cause the operators to ramp the unit down during the test.

The valve controllers on the inlet isolation valves (2-CW-MOV-206A, B, C and D) do not allow for part-stroke exercising. The outlet isolation valves (2-CW-MOV-200A, B, C and D) can be throttled and will be part-stroke exercised every quarter as required by ISTC-3521(b).

Testing Frequency

These valves will be full stroke exercised every quarter except when the circulating water temperature is greater than 80 °F. In this case, the valves will be full stroke exercised every cold shutdown but not more frequently than once every three months. The outlet isolation valves (2-CW-MOV-200A, B, C and D) will be part-stroke exercised every quarter.

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4.7 VALVE TEST PROGRAM REACTOR REFUELING JUSTIFICATIONS

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

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

REACTOR REFUELING JUSTIFICATION RRV-1

System: Residual Heat Removal

Valve(s): 2-RH-MOV-2700 2-RH-MOV-2701 2-RH-MOV-2720A 2-RH-MOV-2720B

Category: B

Class: 1 (2-RH-MOV-2700, 2702 and 2720B) and 2 (2-RH-MOV-2720A)

Function: RHR Supply and Return Isolation Valves

Reactor Refueling Justification

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

The RHR suction valves 2-RH-MOV-2700 and 2701 are located in series. To cycle these valves for testing, the RHR pumps must be secured. The RHR system is required to be operable during cold shutdown and reactor refueling while fuel is in the reactor vessel. Also, failure of the valves to stroke open during testing will cause a loss of RHR system function. According to NUREG-1482, Revision 1, Section 3.1.1(1), loss of system function if a valve fails in a non-conservative position during cycling is adequate justification to defer testing. Therefore, these valves should only be cycled when the reactor vessel is defueled.

The RHR return isolation valves 2-RH-MOV-2720A and B are arranged in parallel. Therefore, the failure of one valve to cycle properly will not disable RHR. However, the discharge valves will be tested at the same interval as the suction valves because the small increase in safety gained by testing them during cold shutdown does not justify the burden of testing and tracking the RHR isolation valves on different test intervals.

Testing Frequency

These valves will be full stroke exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-2

System: Service Water

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Valve(s):	2-SW-MOV-203A	2-SW-MOV-204C
	2-SW-MOV-203B	2-SW-MOV-204D
	2-SW-MOV-203C	2-SW-MOV-205A
	2-SW-MOV-203D	2-SW-MOV-205B
	2-SW-MOV-204A	2-SW-MOV-205C
	2-SW-MOV-204B	2-SW-MOV-205D

Category: B

Class: 3

Function: Recirculation Spray Heat Exchanger Isolation Valves

Reactor Refueling Justification

The recirculation spray heat exchangers are designed to transfer heat from the containment recirculation spray system to the service water system. Four heat exchangers (2-RS-E-1A, B, C and D) are installed in the Unit 2 containment. Each heat exchanger has a service water supply line with a 24" motor operated isolation valve (2-SW-MOV-204A, B, C and D), and a service water return line with a 24" motor operated isolation valve (2-SW-MOV-205A, B, C and D). The supply lines are fed by two service water headers, each having two 30" motor operated isolation valves in parallel (2-SW-MOV-203A and B, and 2-SW-MOV-203C and D). One header feeds heat exchangers 2-RS-E-1B and 1C. All of the isolation valves are butterfly valves and are normally closed. Upon initiation of containment recirculation spray these, valves automatically open.

The service water supply and return line isolation valves provide the second containment isolation boundary for the recirculation spray heat exchangers. Each heat exchanger loop is considered a closed system within the containment. Therefore, although the isolation valves are designated as containment isolation valves in UFSAR Table 5.2-2, they are not subject to Appendix J leak testing. However, each heat exchanger train is subject to leak testing whenever the system membrane is breached, which normally occurs during maintenance on the system during refueling outages.

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REACTOR REFUELING JUSTIFICATION RRV-2 (Cont.)

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

The 30" header isolation butterfly valves also have a boundary leakage function. The source of service water for Surry Power Station is the James River. The water in the James River is brackish, and is rich in sediments and marine organisms. This raw water must not leak by the header and supply line isolation valves because the sediment and marine growth would foul the heat exchangers. The 30" header isolation butterfly valves prevent the river water from filling the service water header and supply lines up to valves 2-SW-MOV-204A, B, C and D. The service water headers up to the 24" supply line branches are filled with chemically treated water and maintained in a wet layup condition during normal operation to reduce biological fouling, to reduce the initial flow through the heat exchangers and thus reduce the amount of marine growth torn off the pipe walls, and to reduce air entrapment in the heat exchangers.

There have been times when the 30" valves have leaked to the point that the headers had to be drained to prevent service water from reaching the 204 valves. The 30" valves have rubber seats to ensure a leak tight seating surface. As with the 24" butterfly valves, exercising the 30" valves presents more opportunities for seat damage to occur. To reduce damage to the valve seats, the exercise test will be deferred from every three months to every reactor refueling.

A review of stroke time data collected over a 10 year period revealed that there were no stroke time test failures for any of the twelve valves. Therefore, these valves have proven to be highly reliable, and based on good performance the test interval of every reactor refueling will be adequate to maintain this reliability.

Testing Frequency

These valves will be exercised every reactor refueling.

REACTOR REFUELING JUSTIFICATION RRV-3

System: Main Steam System

Valve(s): 2-MS-RV-201A 2-MS-RV-201B 2-MS-RV-201C

Category: B

Class: 2

Function: Main Steam Header Discharge to Atmosphere Pressure Control Valves

Reactor Refueling Justification

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

If the plant is at power, upstream isolation valves must be closed manually. Then the pressure control valves must be stroked and observed locally when performing the failsafe test. Given that test personnel must stand near the high temperature main steam lines and valves when manipulating the upstream manual isolation valves, and the high temperatures in the main steam valve house, this test presents a hazardous situation for the test personnel when performed under high temperature conditions. To ensure the safety of test personnel, this test should be performed during reactor refueling outages when the main steam lines and the main steam valve house are cooler.

Testing Frequency

These valves will be exercised closed every reactor refueling.

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REACTOR REFUELING JUSTIFICATION RRV-4

System: Chemical and Volume Control

Valve(s): 2-CH-MOV-2373

Category: B

Class: 2

Function: Charging Pump Common Recirculation Header Isolation Valve

Reactor Refueling Justification

This normally open motor operated valve is located on the common recirculation header downstream from the charging pumps. During a small break LOCA event, isolation of the recirculation line is required when the RCS pressure drops below 1000 psig. In this event, valve 2-CH-MOV-2373 would have to close if charging pump 2-CH-P-1B is the running pump and the "H" emergency bus were to fail. Pump 2-CH-P-1B is powered by the "J" emergency bus and the downstream dedicated recirculation line isolation valve 2-CH-MOV-2275B is powered by the "H" bus. With the "H" bus failed, emergency procedure 2-E-1 calls for 2-CH-MOV-2373 to be closed if a response is not obtained when closing 2-CH-MOV-2275B.

This valve should not be stroke time tested to the closed position during normal power operation because failure of the valve in the partially closed or full closed position during testing when the plant is at power would challenge the operability of all three charging (high head safety injection) pumps.

Also, the charging pumps must provide RCP seal injection while the plant is at cold shutdown and the RCS is pressurized. Failure of the valve in the partially closed or full closed position during testing when the plant is at cold shutdown would challenge the operability of all three charging pumps. Therefore, this valve should not be partially stroked or full stroked during power operation or during cold shutdown. Deferring stroke time testing for this valve to each reactor refueling shutdown is consistent with the guidance given in NUREG-1482, Revision 1, Section 3.1.1(1).

Testing Frequency

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This valve will be full stroke exercised 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 are components that are important to safety but are not in systems or portions of systems that are classified ASME Class 1, 2 or 3.

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

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

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System: Emergency Generator

Valve(s): 2-EG-43 2-EG-44 2-EG-SOV-200A 2-EG-SOV-200B

Category: B

Class: NC

Function: 2-EG-43, 44 EDG Starting Air/Drive Air Control/ Valves 2-EG-SOV-200A and B Air Start System Solenoid Valves

ISTC Code Requirements Which Will Not Be Met

For valves 2-EG-43,44, and 12-EG-SOV-200A, B, measure stroke time.

Basis for Alternate Testing

Valves 2-EG-43 and 44 are air pilot valves that open to supply drive air to the EDG air starting motors. These valves along with the air start solenoid valves 2-EG-SOV-200A and B have actuation times considerably under a second and there is no visual reference on the valve to observe the stroke; therefore, the stroke time cannot be measured.

Alternate Testing

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

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

System: EE

Valve(s): 1-EE-SOV-102 1-EE-SOV-103

Category: B

Class: NC

Function: Diesel Fuel Oil Pump Discharge Valves

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ISTC Code Requirements Which Will Not Be Met

Measure stroke time.

Basis for Alternate Testing

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

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

Alternate Testing

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

System: Refer to Table VNC-3

Valve(s): Refer to Table VNC-3

Category: Refer to Table VNC-3

Class: Refer to Table VNC-3

Function: Refer to Table VNC-3

ISTC Code Requirements Which Will Not Be Met

Measure stroke time

Basis for Alternate Testing

The ASME OM Code, ISTC-5100, describes the exemption of stroke-time testing for power operated control valves whose only safety function is to fail in the safety direction. ISTC-5100 states:

"All valves shall be tested in accordance with the applicable requirements of ISTC-3000, and as identified below, except for power-operated control valves that only have a fail-safe safety function.

For power-operated control valves that only have a fail-safe safety function, the requirements for valve stroke-time measurement testing, the associated stroke-time test acceptance criteria, and any corrective actions that would result from stroke-time testing need not be met. For these valves, all other applicable requirements of ISTC-3000, and as identified below, shall be met."

The power-operated control valves listed in Table VNC-3 have only a failsafe function. We will be applying ISTC-5100 to the testing of the control valves listed in Table VNC-3.

Alternate Testing

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The control valves listed in Table VNC-3 will be tested to the requirements of ISTC-5100.

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

Table VNC-3

Valve Number	System	OM Category	ASME Class	Function
2-FW-FCV-2478 2-FW-FCV-2488 2-FW-FCV-2498	Feedwater	В	NC	Main Feedwater Regulating Valves
2-FW-HCV-255A 2-FW-HCV-255B 2-FW-HCV-255C	Feedwater	В	NC	Main Feedwater Regulating Bypass Valves

System: EE

Valve(s): 1-EE-RV-104 1-EE-RV-107

Category: C

Class: NC

Function: Diesel Fuel Oil Pump Discharge Relief Valves

ISTC, Appendix I Code Requirements Which Will Not Be Met

According to ASME OM Appendix I, I-8130(a), "Test Media. Valves shall be tested with the normal system operating fluid and temperature for which they are designed. Alternative liquids and different temperatures may be used, provided the requirements of I-8300 are met." The normal system operating fluid for the diesel fuel oil pump discharge relief valves is diesel fuel oil. The valves are tested with water.

Basis for Alternate Testing

Safety and relief valves used in liquid service are certified by the manufacturers with water in accordance with the requirements of the National Board Inspection Code. This certification process applies to valves used in diesel fuel oil service. Also, there is no correlation from water to diesel fuel oil provided by the manufacturer.

To test the relief valves with diesel fuel oil would require a separate set of test equipment. The current test equipment would be contaminated if fuel oil was used and would not be suitable for use with relief valves that are used in water service.

Testing the set point pressure of the diesel fuel oil pump discharge relief valves with water instead of diesel fuel oil is an industry accepted practice and provides adequate assurance that the relief valves will function properly and protect the diesel fuel oil pump discharge piping.

Alternate Testing

The set pressure test for the diesel fuel oil pump discharge relief valves will be performed with water instead of diesel fuel oil.

5.0 REPORTING OF INSERVICE TEST RESULTS

5.1 PUMP INSERVICE TESTING PROGRAM

A record of each pump will be maintained in accordance with ISTB-9100 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other identification number,

2) a copy or summary of the manufacturer's acceptance test report if available,

3) a copy of the pump manufacturer's operating limits.

A record of inservice test plans will be maintained in accordance with ISTB-9200 that includes the following:

1) category of each pump,

2) the hydraulic circuit to be used,

3) the location and type of measurement for the required test parameters and

4) the method of determining reference values which are not directly measured by instrumentation.

A record of test results will be maintained in accordance with ISTA-9230 that includes the following:

1) equipment identification,

2) date of test or examination,

3) reason for test or examination (e.g., post maintenance, routine inservice test or examination, establishing reference values, etc.),

4) test or examination procedure used;

5) identification of test equipment used;

6) calibration records;

7) values of measured parameters;

8) comparison with allowable ranges of test and examination values, and analysis of deviations;

9) requirement for corrective action; and

10) printed (or typed) name and signature of the person(s) responsible for conducting and analyzing the test and examination.

In accordance with ISTA-9240, the Owner shall maintain records of corrective action that shall include a summary of the corrective actions made, the subsequent inservice test or examination, confirmation of operational adequacy, and the printed (or typed) name and signature of the person(s) responsible for the corrective action and verification of results.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

5.2 VALVE INSERVICE TESTING PROGRAM

A record of each valve will be maintained in accordance with ISTC-9110 that includes the following:

1) the manufacturer and the manufacturer's model and serial or other unique identification number,

2) a copy or summary of the manufacturer' acceptance test report if available,

3) preservice test results and

4) limiting value of full stroke time.

This IST Program Plan meets the requirements of ISTC-9200, Test Plans. A record of test results will be maintained in accordance with ISTA-9230. A record of corrective action will be maintained in accordance with ISTA-9240. The Valve Inservice Test Program, associated surveillance test procedures and results will be kept at Surry Power Station. They will be available for audit by the NRC.

6.0 QUALITY ASSURANCE PROGRAM

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