SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION

HOUSTON LIGHTING AND POWER
COMPANY

UNIT 2 PUMP AND VALVE INSERVICE TEST PLAN

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Revision 2

TABLE OF CONTENTS Rev. 2

1.0 INTRODUCTION

1.1 General

This document is prepared in accordance with the requirements of the Code of Federal Regulations 10CFR50.55a(g). Regulatory Guide 1.26, Revision 3, was used for safety-related classification determination for the pumps included in this plan. Draft Regulatory Guide, Task MS 901-4, "Identification of Valves for Inclusion in Inservice Testing Programs", was used as guidance for determining the valves subject to the testing requirements of Subsection IWV of the ASME Boiler and Pressure Vessel Code.

1.2 Scope

This document provides a description of the pump and valve inservice testing plan for the South Texas Project Electric Generating Station Unit 2 prepared in accordance with the requirements of Subsections IWP and IWV of the ASME Boiler and Pressure Vessel Code Section XI, 1983 Edition through Summer 1983 Addenda. This plan is referenced by South Texas Project Electric Generating Station Unit 2 Technical Specification 4.0.5.

1.3 Effective Period

This document shall go into effect prior to fuel load and shall then remain in effect through the first 120 month interval of commercial operation.

1.4 Plan Revisions

As a minimum, this plan will be reviewed and revised as necessary for compliance with the ASME code in effect 12 months prior to the end of the first 120 months of commercial operation. Similarly, this plan will be reviewed and revised for each subsequent 120 month interval. Houston Lighting and Power Company reserves the right to submit plan revisions which may enhance or improve this pump and valve inservice test plan at any time within the effective period.

1.0 INTRODUCTION

1.1 General

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This document provides a description of the pump and valve inservice testing plan for the South Texas Project Electric Generating Station Unit 2 prepared in accordance with the requirements of Subsections IWP and IWV of the ASME Boiler and Pressure Vessel Code Section XI, 1983 Edition through Summer 1983 Addenda. This plan is referenced by South Texas Project Electric Generating Station Unit 2 Technical Specification 4.0.5.

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2.0 INSERVICE TESTING OF PUMPS

The table "Unit 2 IST Pump List" describes the inservice test plan for pumps subject to the requirements of Subsection IWP of the ASME Boiler and Pressure Vessel Code Section XI, 1983 Edition through Summer 1983 Addenda. The table provides the following information:

a. Identification of the pumps to be tested,

b. Applicable ASME code class,

c. P&ID and P&ID grid coordinates (See Section 4.0, Drawings),

d. Test parameters to be measured,

e. Test interval,

f. Relief requests,

g. Remarks.

Relief from the requirements of Section XI is requested where full compliance with the code is not practical. In such cases, specific information is provided in Section 2.1 which identifies the applicable code requirements, justification for the relief request, and the alternate testing to be performed.

Unit 2 IST Pump List
Auxiliary Feedwater - AF

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Auxiliary Feedwater Pump 21	3	F00024	F7	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Auxiliary Feedwater Pump 22	3	F00024	D7	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
Auxiliary Feedwater Pump 23	3	F00024	B7	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Auxiliary Feedwater - AF

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Auxiliary Feedwater Pump 24	3	F00024	H7	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
				3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
				5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Quarterly	-	

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Component Cooling Water Pump 2A	3	F05017	B7	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Component Cooling Water Pump 2B	3	F05018	B7	3. Differential Pressure (ΔP = Po-Pi)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
Component Cooling Water Pump 2C	3	F05019	B7	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (To)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Essential Chilled Water - CH

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Essential Chilled Water Pump 21 A	3	V10001	F7	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Essential Chilled Water Pump 21 B	3	V10001	D7	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
Essential Chilled Water Pump 21 C	3	V10001	A7	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Containment Spray - CS

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Containment Spray Pump 2A	2	F05037	G3	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Containment Spray Pump 2B	2	F05037	E3	3. Differential Pressure (ΔP = Po-Pi)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
Containment Spray Pump 2C	2	F05037	C3	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Boric Acid Transfer Pump 2A	3	F05009	D5	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Boric Acid Transfer Pump 2B	3	F05009	C5	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
				5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Chemical and Volume Control - CV

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Centrifugal Charging Pump 2A	2	F05007	D5	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Centrifugal Charging Pump 2B	2	F05007	B5	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
				5. Vibration Amplitude (V)	Quarterly	RR4, RR5	
				6. Bearing Temperature (Tb)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Essential Cooling Water - EW

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Essential Cooling Water Pump 2A	3	F05038	G3	1. Inlet Pressure (Pi)	Quarterly	RR2	
				2. Outlet Pressure (Po)	Quarterly	-	
Essential Cooling Water Pump 2B	3	F05038	E3	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	RR2	
				4. Flow Rate (Q)	Quarterly	-	
Essential Cooling Water Pump 2C	3	F05038	B3	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Essential Cooling Water - EW

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Essential Cooling Water Screen Wash Booster Pump 2A	3	F05039	D7	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Essential Cooling Water Screen Wash Booster Pump 2B	3	F05039	D4	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	-	
				4. Flow Rate (Q)	Quarterly	-	
Essential Cooling Water Screen Wash Booster Pump 2C	3	F05039	D2	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Annually	RR7	
				7. Lubricant Level or Pressure	Observe Quarterly	-	
				8. Speed (N)	Not Applicable	-	

Unit 2 IST Pump List
Residual Heat Removal - RH

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Residual Heat Removal Pump 2A	2	F20000	B6	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Residual Heat Removal Pump 2B	2	F20000	D6	3. Differential Pressure (ΔP = Po-Pi)	Not Applicable	-	
				4. Flow Rate (Q)	Quarterly	-	
Residual Heat Removal Pump 2C	2	F20000	G6	5. Vibration Amplitude (V)	Quarterly	RR4, RR5	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
High Head Safety Injection Pump 2A	2	FO5013	F4	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
High Head Safety Injection Pump 2B	2	FO5014	G3	3. Differential Pressure (ΔP = Po-Pi)	Quarterly	RR3	
				4. Flow Rate (Q)	Quarterly	RR3	
High Head Safety Injection Pump 2C	2	FO5015	F3	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

Pump Identification	ASME Code Class	P&ID	P&ID Grid Coordinates	Measured Test Parameters	Test Interval	Relief Requests	Remarks
Low Head Safety Injection Pump 2A	2	F05013	C3	1. Inlet Pressure (Pi)	Quarterly	-	
				2. Outlet Pressure (Po)	Quarterly	-	
Low Head Safety Injection Pump 2B	2	F05014	D3	3. Differential Pressure ($\Delta P = Po-Pi$)	Quarterly	RR3	
				4. Flow Rate (Q)	Quarterly	RR3	
Low Head Safety Injection Pump 2C	2	F05015	D3	5. Vibration Amplitude (V)	Quarterly	RR4, RR6	
				6. Bearing Temperature (Tb)	Not Applicable	RR1	
				7. Lubricant Level or Pressure	Not Applicable	RR1	
				8. Speed (N)	Not Applicable	-	

2.1 Requests for Relief from ASME Boiler and Pressure Vessel Code Section XI Requirements

RR1

Test Requirement

Table IWP-3100-1 requires that proper lubricant level or pressure be observed and bearing temperature be measured during each inservice test.

Basis for Relief

The bearings of the Containment Spray Pumps, the Boric Acid Transfer Pumps, the Essential Cooling Water Pumps, the Residual Heat Removal Pumps, the High Head Safety Injection Pumps, and the Low Head Safety Injection Pumps are lubricated and cooled by the pumped fluid making it impractical to verify proper lubricant level or pressure and measure bearing temperature.

Alternate Testing

Lubricant level or pressure will not be observed and bearing temperature will not be measured for these pumps.

RR2

Test Requirement

IWP-4200 requires direct measurement of pressure.

Basis for Relief

The Essential Cooling Water Pumps are vertical submerged suction centrifugal pumps with no direct means to measure inlet pressure as required.

Alternate Testing

The inlet pressure will be calculated based on the water level above the pump inlet.

RR3

Test Requirement

IWP-3100 requires that the resistance of the system shall be varied until either the measured differential pressure or the measured flow rate equals the corresponding reference value.

Basis for Relief

Both the High Head Safety Injection Pumps and the Low Head Safety Injection Pumps have a recirculation flow path containing a restricting orifice which limits flow through the recirculation line to a specific, fixed flow rate. When these pumps are tested using their respective fixed-resistance flow paths, the flow rates will be approximately the same each time the tests are conducted.

Alternate Testing

Pump testing will be performed using the fixed-resistance flow paths. The measured differential pressure will be compared to the allowable ranges given in Table IWP-3100-2 in order to determine pump operability.

RR4

Test Requirement

IWP-4120 requires the full scale range of each instrument to be three times the reference value or less.

Basis for Relief

Portable vibration indicators have selectable ranges in overlapping scales (multiples of 1 and 3 full scale). It is possible to have an indicated vibration which, in order to read on an available scale, will not be in the range of the instrument required by IWP-4120.

Alternate Testing

The portable vibration indicators, which provide overall readout repeatability within the accuracy limits of Table IWP-4110-1, will be used to obtain vibration data except when permanently installed instrumentation is used.

RR5

Test Requirement

IWP-4120 requires the full scale range of each instrument to be three times the reference value or less.

Basis for Relief

The Centrifugal Charging Pumps (located in the Mechanical Auxiliary Building) and the Residual Heat Removal Pumps (located in the Reactor Containment Building) are in areas of high radiation. For ALARA considerations, the Vibration Monitoring System (located in the Control Room) is used to measure vibration amplitude. The vibration monitoring system is an online system which constantly monitors the machine and provides alarms when alert limits are reached. The full scale range of each instrument is fixed and the above requirement could be exceeded. Rescaling the instrument to meet the requirements of IWP-4120 for a low reference value would impair the ability of the system to monitor the machine up to the severity limit determined by size, speed and application.

Alternate Testing

The Vibration Monitoring System will be used to obtain vibration data for the Residual Heat Removal and Centrifugal Charging Pumps. The system provides overall readout repeatability within the accuracy limits specified in Table IWP-4110-1 with indication in increments of at least 0.2 mils. If the Vibration Monitoring System is unavailable, portable vibration indicators will be used as described in RR4.

RR6

Test Requirement

IWP-4510 requires at least one displacement vibration amplitude shall be read during each inservice test. Table IWP-3100-2 defines the allowable range of vibration based on displacement amplitude.

Basis for Relief

The use of a velocity standard, rather than a displacement standard, is more indicative of pump condition and is industry accepted.

Alternate Testing

At least one velocity vibration measurement (in/sec unfiltered peak) shall be read during each inservice test. The frequency response range of the vibration measuring transducers and the readout system shall be from one-half minimum pump shaft rotational speed to at least 1,000 Hertz with an accuracy of at least ± 5%. All other requirements of IWP-4510 and IWP-4520 shall be complied with. Allowable ranges of vibration velocity for pump testing shall be as follows:

	Test Quantity	Acceptable Range	Alert Range	Required Action Range
1.	V_t when $0 \leq V_{r1} \leq 0.05$ in/sec	0 to 0.075 in/sec	0.075 to 0.1 in/sec	>0.1 in/sec
2.	V_t when $0.05 \leq V_{r2} \leq 0.1$ in/sec	0 to 0.15 in/sec	0.15 to 0.2 in/sec	>0.2 in/sec
3.	V_t when $0.1 \leq V_{r3} \leq 0.15$ in/sec	0 to 0.2 in/sec	0.2 to 0.25 in/sec	>0.25 in/sec
4.	V_t when $0.15 \leq V_{r4} \leq 0.25$ in/sec	0 to 0.285 in/sec	0.285 to 0.314 in/sec	>0.314 in/sec

Definitions: V_r = Reference velocity measurement (in/sec unfiltered peak)
V_t = Surveillance test velocity measurement (in/sec unfiltered peak)

RR7

Test Requirement

IWP-3300 requires a bearing temperature measurement at least once a year.

Basis for Relief

The yearly temperature measurement will not provide significant information about pump conditions. Industry experience has shown that bearing temperature changes caused by degrading bearings occur only after major degradation has occurred at the pump. Prior to this major pump degradation, the vibration measurement would provide the necessary information to warn of an impending malfunction. Deletion of this measurement will not have a significant effect on pump evaluation since vibration amplitude is measured quarterly.

Alternate Testing

Vibration velocity, as described in RR6, will be measured quarterly in lieu of bearing temperature measurement for all pumps which would require bearing temperature measurement per IWP-4310 except the Centrifugal Charging Pumps. The Centrifugal Charging Pumps, due to ALARA considerations, will have vibration measured quarterly using remote instrumentation which provides only vibration displacement.

3.0 INSERVICE TESTING OF VALVES

The table "Unit 2 IST Valve List" describes the inservice test plan for valves subject to the requirements of Subsection IWV of the ASME Boiler and Pressure Vessel Code Section XI, 1983 Edition through Summer 1983 Addenda. The table provides the following information:

a. Identification of the valves to be tested,

b. Description of valve function,

c. Applicable ASME code class,

d. P&ID and P&ID grid coordinates (See Section 4.0, Drawings),

e. Section XI valve category,

f. Valve size,

g. Valve type,

h. Valve actuator type,

i. Normal position during power operation,

j. Failure position,

k. Test requirements and alternate testing,

l. Relief requests and/or clarification (if necessary),

m. Stroke time limit (if applicable).

Relief from the requirements of Section XI is requested where full compliance with the code is not practical. In such cases, specific information is provided in Section 3.1 which identifies the applicable code requirements, justification for the relief request, and the alternate testing to be performed. In certain cases, relief is not requested, but the code-required testing is performed in an unusual or complicated manner. In such cases, clarifications are provided in Section 3.1 to explain the actual testing method to be used.

Some valves have a fail-safe position. Valves which fail open or fail closed are tested to their failure positions during the exercising tests. The test method used meets the requirements of IWV-3415 in every case, since remote valve control switch operation removes actuator power from each fail-safe valve.

Rapid-acting valves are valves which have very short stroke times less than or equal to 2 seconds, and are not trended in accordance with IWV-3417(a). Instead, stroke times are compared to the specified stroke time limits not to exceed 2 seconds and corrective actions (if required) are taken in accordance with IWV-3417(b).

Unit 2 IST Valve List Legend

VALVE ID - Valve Identification

The alphanumeric valve designator used as a unique identifier for each valve.

VALVE FUNCTION - Valve Function Description

A brief description of the function of each valve.

CL - Code Class

The appropriate ASME code classification (Safety Class 1,2,3 or NS (Non-Safety Related)) for each valve.

P&ID - Piping and Instrumentation Diagram

The P&ID showing the location of each valve in the system (See Section 4.0, Drawings).

GC - P&ID Grid Coordinates

The grid coordinates describing where each valve appears on each P&ID.

CAT- Section XI Category

The category applicable to each valve per IWV-2200.

SIZE - Valve Size

The size of the valve (inside diameter) in inches.

TYPE - Valve Type

The type of valve described by the following:

A = Angle
ARC= Auto Recirc Check
B = Butterfly
BL = Ball
CK = Check
D = Diaphragm
GL = Globe
GT = Gate
PR = Pressure Relief or Safety
SCK= Stop Check

ACT - Actuator Type

The type of actuator on each valve described by the following:

AO = Air Operated
HO = Hydraulic Operated
M = Manual
MO = Motor Operated
SA = Self/System Actuated
SO = Solenoid Operated

NORM. POS. - Normal Position

The normal position of each valve during power operation described by the following:

NC = Normally Closed
NO = Normally Open
NI = Normally Intermittent (Open or Closed)
NT = Normally Throttled or Controlling

FAIL POS. - Fail-safe Position

The position of each valve when actuator power or air is secured as described by the following:

FC = Fails Closed
FO = Fails Open
FAI = Fails As Is
- = Not Applicable

TEST REQUIREMENT - Test Requirements (Alternate Testing)

The test requirements (or alternate testing) required for each valve as described by the following:

CV = Exercise check valves to the position required to fulfill their function at least once every three (3) months.

LT = Valves are leak tested per Appendix J to 10CFR50 at each refueling outage or by alternate testing method.

MT = Stroke time measurements are taken and compared to the stroke time limiting value per Section XI Article IWV-3410.

Q = Exercise valves (full stroke) for operability at least once every three (3) months except when the other train(s) of a redundant system are inoperable. Nonredundant valves in the remaining train(s) should not be cycled if their failure would cause a total loss of system function.

R = Remote valve position indicator is used during valve stroking and must be calibrated at least once every two (2) years.

SRV = Safety and relief valves are tested per Section XI Article IWV-3510.

(CP) = Containment Purge Valves are leak tested per plant Technical Specifications.

(CS) = Exercise valve (full stroke) for operability during each cold shutdown and at each refueling outage. In case of frequent cold shutdowns, valve testing is not required to be performed more often than once every three (3) months.

Valve testing will commence not later than 48 hours after an unscheduled cold shutdown and continue until complete or until plant is ready to return to power. Completion of all valve testing is <u>not</u> a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during the subsequent cold shutdowns to meet the code-specified testing frequency.

(CSDI)= Exercise valve (partial stroke) for operability at each cold shutdown not to exceed once every three (3) months and disassemble and inspect check valve at each refueling outage.

(CSP)= Exercise valve (partial stroke) for operability at least once every three (3) months and exercise valve (full stroke) at each cold shutdown not to exceed once every three (3) months.

(CSR)= Exercise valve (partial stroke) for operability at each cold shutdown not to exceed once every three (3) months and exercise valve (full stroke) at each refueling outage.

(DI) = Disassemble and inspect check valve at each refueling outage.

(NA) = No testing required.

(NST)= No stroke time measurements are taken.

(NT) = Stroke time not trended due to very short stroke times (valves are classified as rapid-acting).

(PIV)= Reactor Coolant System Pressure Isolation Valves are leak tested per plant Technical Specifications.

(PO) = Valve seat leak tightness is demonstrated during normal plant operation.

(PRR)= Exercise valve (partial stroke) for operability at least once every three (3) months and exercise valve (full stroke) at each refueling outage.

(PRS)= Exercise valve (partial stroke) for operability at least once every three (3) months providing RCS pressure is greater than pump shutoff head and exercise valve (full stroke) at each refueling outage.

(RR) = Exercise valve (full stroke) for operability at each refueling outage not to exceed once every two (2) years.

RR/C - Relief Request/Clarification

The appropriate relief request for each valve when alternate testing is proposed or clarification of testing method if required (See Section 3.1).

ST - Stroke Time

The close and open stroke time limiting value for power-operated valves in seconds.

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
AF-0036	AFW Pump No.21 Auto Recirc.	3	F00024	F6	C	4	ARC	SA	NC	--	CV	--	---	---
AF-0058	AFW Pump No.22 Auto Recirc.	3	F00024	D6	C	4	ARC	SA	NC	--	CV	--	---	---
AF-0091	AFW Pump No.23 Auto Recirc.	3	F00024	B6	C	4	ARC	SA	NC	--	CV	--	---	---
AF-0011	AFW Pump No.24 Auto Recirc.	3	F00024	H5	C	4	ARC	SA	NC	--	CV	--	---	---
FV-7517	AFW Pump No.21 Disch.Crosstie	3	F00024	F4	B	4	GL	AO	NC	FC	Q,R,MT	--	10	---
FV-7516	AFW Pump No.22 Disch.Crosstie	3	F00024	D4	B	4	GL	AO	NC	FC	Q,R,MT	--	10	---
FV-7515	AFW Pump No.23 Disch.Crosstie	3	F00024	B4	B	4	GL	AO	NC	FC	Q,R,MT	--	10	---
FV-7518	AFW Pump No.24 Disch.Crosstie	3	F00024	G4	B	4	GL	AO	NC	FC	Q,R,MT	--	10	---
FV-7525	AFW Pump No.21 Disch.Control	3	F00024	F4	B	4	GL	MO	NO	FAI	Q,R,MT	--	55	55
FV-7524	AFW Pump No.22 Disch.Control	3	F00024	D4	B	4	GL	MO	NO	FAI	Q,R,MT	--	57	57
FV-7523	AFW Pump No.23 Disch.Control	3	F00024	B4	B	4	GL	MO	NO	FAI	Q,R,MT	--	58	58
FV-7526	AFW Pump No.24 Disch.Control	3	F00024	H3	B	4	GL	MO	NO	FAI	Q,R,MT	--	50	48

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0048	AFW Pump No.21 Disch.Stop Ck.	2	F00024	F2	BC	4	SCK	MO	NC	FAI	Q,R,MT	RR1,2	45	45
								SA	NC	--	CV(CS)	RR1,2	---	---
MOV-0065	AFW Pump No.22 Disch.Stop Ck.	2	F00024	D2	BC	4	SCK	MO	NC	FAI	Q,R,MT	RR1,2	44	45
								SA	NC	--	CV(CS)	RR1,2	---	---
MOV-0085	AFW Pump No.23 Disch.Stop Ck.	2	F00024	B2	BC	4	SCK	MO	NC	FAI	Q,R,MT	RR1,2	45	45
								SA	NC	--	CV(CS)	RR1,2	---	---
MOV-0019	AFW Pump No.24 Disch.Stop Ck.	2	F00024	H2	BC	4	SCK	MO	NC	FAI	Q,R,MT	RR1,2	37	37
								SA	NC	--	CV(CS)	RR1,2	---	---
AF-0119	AFW to SG2A Check	2	F00024	F1	C	8	CK	SA	NC	--	CV(CS)	RR2,3	---	---
AF-0120	AFW to SG2B Check	2	F00024	D1	C	8	CK	SA	NC	--	CV(CS)	RR2,3	---	---
AF-0121	AFW to SG2C Check	2	F00024	C1	C	8	CK	SA	NC	--	CV(CS)	RR2,3	---	---
AF-0122	AFW to SG2D Check	2	F00024	H1	C	8	CK	SA	NC	--	CV(CS)	RR2,3	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0143	AFW Pump Turbine Stop	2	F00024	G8	BC	4	SCK	MO	NO	FAI	Q,R,MT	--	34	58
								SA	NC	--	CV	--	---	---
FV-0143	AFW Pump Turbine Stop Bypass	2	F00024	G8	B	1	GT	SO	NC	FC	Q,R,MT (NT)	RR7	2	2
MOV-0514	AFW Pump Turbine Control	3	F00024	G7	B	4	GT	MO	NC	FAI	Q,R,MT	--	17	16

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-2453	Containment Sump Sample	2	Z47501	G7	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-2454	RHR Sample	2	Z47501	E7	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-2455	RCS Sample	2	Z47501	D7	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7,42	2	---
											LT	--	---	---
FV-2455A	RCS Sample	2	Z47501	D7	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7,42	2	---
											LT	--	---	---
FV-2456	Containment Atmosphere Sample	2	Z47501	C7	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-2457	Gaseous PASS Return	2	Z47501	C2	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-2458	Liquid PASS Return	2	Z47501	E2	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
BA-0004	Breathing Air to CTMT OB Isol.	2	F05044	F6	A	1	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
BA-0006	Breathing Air to CTMT IB Check	2	F05044	G6	AC	1	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0642	CCW HTX 2A Bypass	3	F05017	B6	B	16	B	MO	NC	FAI	Q,R,MT	--	16	16
MOV-0644	CCW HTX 2B Bypass	3	F05018	B6	B	16	B	MO	NC	FAI	Q,R,MT	--	16	16
MOV-0646	CCW HTX 2C Bypass	3	F05019	B6	B	16	B	MO	NC	FAI	Q,R,MT	--	16	17
MOV-0643	CCW HTX 2A Outlet	3	F05017	B5	B	24	B	MO	NO	FAI	Q,R,MT	--	17	17
MOV-0645	CCW HTX 2B Outlet	3	F05018	B5	B	24	B	MO	NO	FAI	Q,R,MT	--	17	16
MOV-0647	CCW HTX 2C Outlet	3	F05019	B5	B	24	B	MO	NO	FAI	Q,R,MT	--	15	17
MOV-0057	CCW to RCFC 21A,22A OB Isol.	2	F05017	D2	A	14	B	MO	NC	FAI	Q,R,MT	--	17	17
											LT	--	---	---
MOV-0136	CCW to RCFC 21B,22B OB Isol.	2	F05018	D2	A	14	B	MO	NC	FAI	Q,R,MT	--	17	16
											LT	--	---	---
MOV-0197	CCW to RCFC 21C,22C OB Isol.	2	F05019	D2	A	14	B	MO	NC	FAI	Q,R,MT	--	16	16
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0059	CHW to RCFC 21A,22A OB Isol.	2	F05017	D2	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
MOV-0137	CHW to RCFC 21B,22B OB Isol.	2	F05018	D2	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
MOV-0199	CHW to RCFC 21C,22C OB Isol.	2	F05019	D2	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
CC-0058	CCW to RCFC 21A,22A IB Ck.	2	F05017	D2	AC	14	CK	SA	NO	--	CV	--	---	---
											LT	--	---	---
CC-0138	CCW to RCFC 21B,22B IB Ck.	2	F05018	D2	AC	14	CK	SA	NO	--	CV	--	---	---
											LT	--	---	---
CC-0198	CCW to RCFC 21C,22C IB Ck.	2	F05019	D2	AC	14	CK	SA	NO	--	CV	--	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0068	CCW from RCFC 21A,22A IB Isol.	2	F05017	D4	A	14	B	MO	NO	FAI	Q,R,MT	--	18	18
											LT	--	---	---
MOV-0147	CCW from RCFC 21B,22B IB Isol.	2	F05018	D4	A	14	B	MO	NO	FAI	Q,R,MT	--	17	16
											LT	--	---	---
MOV-0208	CCW from RCFC 21C,22C IB Isol.	2	F05019	D4	A	14	B	MO	NO	FAI	Q,R,MT	--	17	16
											LT	--	---	---
MOV-0069	CCW from RCFC 21A,22A OB Isol.	2	F05017	D4	A	14	B	MO	NC	FAI	Q,R,MT	--	16	16
											LT	--	---	---
MOV-0148	CCW from RCFC 21B,22B OB Isol.	2	F05018	D4	A	14	B	MO	NC	FAI	Q,R,MT	--	17	16
											LT	--	---	---
MOV-0210	CCW from RCFC 21C,22C OB Isol.	2	F05019	D4	A	14	B	MO	NC	FAI	Q,R,MT	--	16	16
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0070	CHW from RCFC 21A,22A OB Isol.	2	F05017	C4	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
MOV-0149	CHW from RCFC 21B,22B OB Isol.	2	F05018	C4	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
MOV-0209	CHW from RCFC 21C,22C OB Isol.	2	F05019	C4	A	8	B	MO	NO	FAI	Q,R,MT	--	10	14
											LT	--	---	---
MOV-0012	CCW to RHR 2A HTX OB Isol.	2	F05017	E2	A	16	B	MO	NO	FAI	Q,R,MT	--	17	17
											LT	--	---	---
MOV-0122	CCW to RHR 2B HTX OB Isol.	2	F05018	E2	A	16	B	MO	NO	FAI	Q,R,MT	--	17	17
											LT	--	---	---
MOV-0182	CCW to RHR 2C HTX OB Isol.	2	F05019	E2	A	16	B	MO	NO	FAI	Q,R,MT	--	16	16
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CC-0013	CCW to RHR 2A HTX IB Check	2	F05017	E2	AC	16	CK	SA	NC	--	CV	--	---	---
											LT	--	---	---
CC-0123	CCW to RHR 2B HTX IB Check	2	F05018	E2	AC	16	CK	SA	NC	--	CV	--	---	---
											LT	--	---	---
CC-018[illegible]	CCW to RHR 2C HTX IB Check	2	F05019	E2	AC	16	CK	SA	NC	--	CV	--	---	---
											LT	--	---	---
FV-4531	RHR 2A HTX Outlet	3	F05017	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	21
FV-4548	RHR 2B HTX Outlet	3	F05018	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	20
FV-4565	RHR 2C HTX Outlet	3	F05019	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	19
MOV-0049	CCW from RHR 2A IB Isol.	2	F05017	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	17	17
											LT	--	---	---
MOV-0129	CCW from RHR 2B IB Isol.	2	F05018	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	15	16
											LT	--	---	---
MOV-0189	CCW from RHR 2C IB Isol.	2	F05019	H4	A	16	B	MO	NO	FAI	Q,R,MT	--	16	16
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0050	CCW from RHR 2A OB Isol.	2	F05017	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	16	16
											LT	--	---	---
MOV-0130	CCW from RHR 2B OB Isol.	2	F05018	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	16	16
											LT	--	---	---
MOV-0190	CCW from RHR 2C OB Isol.	2	F05019	H4	A	16	B	MO	NO	FAI	Q,R,MT	--	17	17
											LT	--	---	---
CC-0746	CCW Surge Tank Vacuum Breaker	3	F05017	F6	C	1	CK	SA	NC	--	CV(DI)	RR6	---	---
CC-0315	CCW A Supply Hdr. Check	3	F05020	F7	C	24	CK	SA	NO	--	CV	--	---	---
CC-0313	CCW B Supply Hdr. Check	3	F05020	E7	C	24	CK	SA	NO	--	CV	--	---	---
CC-0311	CCW C Supply Hdr. Check	3	F05020	E7	C	24	CK	SA	NO	--	CV	--	---	---
MOV-0768	CCW A Supply to Chg. Pmp. Clr.	3	F05020	G7	B	6	B	MO	NO	FAI	Q,R,MT	--	16	16
MOV-0770	CCW B Supply to Chg. Pmp. Clr.	3	F05020	G7	B	6	B	MO	NO	FAI	Q,R,MT	--	17	17
MOV-0771	CCW C Supply to Chg. Pmp. Clr.	3	F05020	G7	B	6	B	MO	NO	FAI	Q,R,MT	--	17	17

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4656	CCW Supply to Chg. Pmp. Clrs.	3	F05020	G7	B	6	B	AO	NO	FC	Q,R,MT	--	29	---
MOV-0447	CCW to Spent Fuel Pool HTX	3	F05020	E7	B	18	B	MO	NO	FAI	Q,R,MT	--	14	---
MOV-0032	CCW to Spent Fuel Pool HTX	3	F05020	E6	B	18	B	MO	NO	FAI	Q,R,MT	--	16	---
MOV-0235	CCW to NNS Loop Isol.	3	[illegible]	[illegible]	B	18	B	MO	NO	FAI	Q(CS),R,MT	RR2,34	16	---
MOV-0236	CCW to NNS Loop Isol.	3	F05020	[illegible]	B	18	B	MO	NO	FAI	Q(CS),R,MT	RR2,34	15	---
FV-4540	CCW to PASS Isol.	3	F05020	D8	B	1.5	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4541	CCW to PASS Isol.	3	F05020	D8	B	1.5	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
MOV-0772	CCW A Ret. from Chg. Pp. Clr.	3	F05020	B7	B	6	B	MO	NO	FAI	Q,R,MT	--	16	16
MOV-0774	CCW B Ret. from Chg. Pp. Clr.	3	F05020	B7	B	6	B	MO	NO	FAI	Q,R,MT	--	17	17
MOV-0775	CCW C Ret. from Chg. Pp. Clr.	3	F05020	B7	B	6	B	MO	NO	FAI	Q,R,MT	--	16	16
FV-4657	CCW Ret. from Chg. Pp. Clr.	3	F05020	B7	B	6	B	AO	NO	FC	Q,R,MT	--	24	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0297	CCW to CTMT HTX OB Isol.	3	F05021	G8	B	6	B	MO	NO	FAI	Q,R,MT	--	15	---
MOV-0392	CCW to RCDT HTX IB Isol.	3	F05021	G3	B	4	GT	MO	NO	FAI	Q,R,MT	--	12	---
MOV-0393	CCW to Excess Letdown HTX IB Isol.	3	F05021	G3	B	6	B	MO	NO	FAI	Q,R,MT	--	15	---
MOV-0052	CCW A Return Isolation	3	F05020	D7	B	24	B	MO	NO	FAI	Q,R,MT	--	17	17
MOV-0132	CCW B Return Isolation	3	F05020	C7	B	24	B	MO	NO	FAI	Q,R,MT	--	15	15
MOV-0192	CCW C Return Isolation	3	F05020	C7	B	24	B	MO	NO	FAI	Q,R,MT	--	15	15
MOV-0316	CCW A Supply Isolation	3	F05020	E7	B	24	B	MO	NO	FAI	Q,R,MT	--	17	17
MOV-0314	CCW B Supply Isolation	3	F05020	E7	B	24	B	MO	NO	FAI	Q,R,MT	--	18	15
MOV-0312	CCW C Supply Isolation	3	F05020	F7	B	24	B	MO	NO	FAI	Q,R,MT	--	15	17

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0291	CCW to RCP OB Isolation	2	F05021	H8	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
MOV-0318	CCW to RCP OB Isolation	2	F05021	H8	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
CC-0319	CCW to RCP IB Check	2	F05021	G8	AC	12	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
MOV-0403	CCW from RCP IB Isolation	2	F05021	B1	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
MOV-0542	CCW from RCP IB Isolation	2	F05021	B1	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
CC-0446	CCW from RCP IB Check	2	F05021	B1	AC	1	CK	SA	NC	--	CV(RR)	C4	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0404	CCW from RCP OB Isolation	2	F05021	H1	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
FV-4493	CCW from RCP OB Isolation	2	F05021	H1	A	12	B	AO	NO	FC	Q,R,MT	--	8	---
											LT	--	---	---
MOV-0060	CCW to RCFC 22A Isol.	3	F05017	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	102	102
MOV-0139	CCW to RCFC 22B Isol.	3	F05018	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	102	102
MOV-0200	CCW to RCFC 22C Isol.	3	F05019	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	107	107
MOV-0063	CCW from RCFC 22A Isol.	3	F05017	C4	B	10	B	MO	NO	FAI	Q,R,MT	--	81	81
MOV-0142	CCW from RCFC 22B Isol.	3	F05018	C4	B	10	B	MO	NO	FAI	Q,R,MT	--	80	77
MOV-0203	CCW from RCFC 22C Isol.	3	F05019	C4	B	10	B	MO	NO	FAI	Q,R,MT	--	75	73

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0064	CCW to RCFC 21A Isol.	3	F05017	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	78	79
MOV-0143	CCW to RCFC 21B Isol.	3	F05018	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	78	76
MOV-0204	CCW to RCFC 21C Isol.	3	F05019	D2	B	10	B	MO	NO	FAI	Q,R,MT	--	77	76
MOV-0067	CCW from RCFC 21A Isol.	3	F05017	E4	B	10	B	MO	NO	FAI	Q,R,MT	--	83	83
MOV-0146	CCW from RCFC 21B Isol.	3	F05018	E4	B	10	B	MO	NO	FAI	Q,R,MT	--	77	77
MOV-0207	CCW from RCFC 21C Isol.	3	F05019	E4	B	10	B	MO	NO	FAI	Q,R,MT	--	103	103
FV-0862	CCW from RCFC 21A,22A OB Isol.	2	F05017	C4	A	8	B	AO	NO	FC	Q,R,MT	--	3	---
											LT	--	---	---
FV-0863	CCW from RCFC 21B,22B OB Isol.	2	F05018	C4	A	8	B	AO	NO	FC	Q,R,MT	--	3	---
											LT	--	---	---
FV-0864	CCW from RCFC 21C,22C OB Isol.	2	F05019	C4	A	8	B	AO	NO	FC	Q,R,MT	--	5	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
TV-9476A	EAB Cont. Rm. AHU TCV	3	V10002	F6	B	2	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9476B	EAB Cont. Rm. AHU Bypass	3	V10002	F6	B	2	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
TV-9477A	EAB Main AHU TCV	3	V10002	C6	B	4	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9477B	EAB Main AHU Bypass	3	V10002	C6	B	4	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
TV-9486A	EAB Cont. Rm. AHU TCV	3	V10002	F4	B	2	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9486B	EAB Cont. Rm. AHU Bypass	3	V10002	F4	B	2	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
TV-9487A	EAB Main AHU TCV	3	V10002	C4	B	4	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9487B	EAB Main AHU Bypass	3	V10002	C4	B	4	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
TV-9496A	EAB Cont. Rm. AHU TCV	3	V10002	F1	B	2	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9496B	EAB Cont. Rm. AHU Bypass	3	V10002	F1	B	2	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
TV-9497A	EAB Main AHU TCV	3	V10002	C1	B	4	B	AO	NT	FO	Q,R,MT(NT)	RR7	---	2
TV-9497B	EAB Main AHU Bypass	3	V10002	C1	B	4	B	AO	NT	FC	Q,R,MT(NT)	RR7	2	---
CH-0286	CHW Pump 21 A Disch. Check	3	V10001	F7	C	8	CK	SA	NO	--	CV	--	---	---
CH-0295	CHW Pump 21 B Disch. Check	3	V10001	D7	C	8	CK	SA	NO	--	CV	--	---	---
CH-0304	CHW Pump 21 C Disch. Check	3	V10001	A7	C	8	CK	SA	NO	--	CV	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4135	CTMT Sample IB Isol.	2	Z00046	F4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4101	CTMT Sample OB Isol.	2	Z00046	F4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4127	CTMT Sample Return OB Isol.	2	Z00046	E4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4128	CTMT Sample Return IB Isol.	2	Z00046	E5	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4136	CTMT Sample IB Isol.	2	Z00046	D5	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4104	CTMT Sample OB Isol.	2	Z00046	D4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4133	CTMT Sample Return OB Isol.	2	Z00046	C4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---
FV-4134	CTMT Sample Return IB Isol.	2	Z00046	C5	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4100	CTMT Sample Pt. 1	2	Z00046	G6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4124	CTMT Sample Pt. 3	2	Z00046	F6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4125	CTMT Sample Pt. 5	2	Z00046	F6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4126	CTMT Sample Pt. 6	2	Z00046	E6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4103	CTMT Sample Pt. 2	2	Z00046	E6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4129	CTMT Sample Pt. 4	2	Z00046	D6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4130	CTMT Sample Pt. 7	2	Z00046	D6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2
FV-4131	CTMT Sample Pt. 8	2	Z00046	C6	B	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	2

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0015A	Spray Additive Tank 2A Outlet	3	F05037	G6	B	2	D	MO	NC	FAI	Q,R,MT	--	10	12
MOV-0015B	Spray Additive Tank 2B Outlet	3	F05037	E6	B	2	D	MO	NC	FAI	Q,R,MT	--	13	14
MOV-0015C	Spray Additive Tank 2C Outlet	3	F05037	C6	B	2	D	MO	NC	FAI	Q,R,MT	--	11	14
CS-0018A	Spray Additive Tank 2A Outlet	2	F05037	G4	C	2	CK	SA	NC	--	CV	--	---	---
CS-0018B	Spray Additive Tank 2B Outlet	2	F05037	E4	C	2	CK	SA	NC	--	CV	--	---	---
CS-0018C	Spray Additive Tank 2C Outlet	2	F05037	C4	C	2	CK	SA	NC	--	CV	--	---	---
MOV-0001A	CS Pump 2A Disch. OB Isol.	2	F05037	G5	A	8	GT	MO	NC	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0001B	CS Pump 2B Disch. OB Isol.	2	F05037	E5	A	8	GT	MO	NC	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0001C	CS Pump 2C Disch. OB Isol.	2	F05037	C5	A	8	GT	MO	NC	FAI	Q,R,MT	--	15	15
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CS-0002	CS Pump 2A Disch. IB Check	2	F05037	G7	AC	8	CK	SA	NC	--	CV(DI)	RR9	---	---
											LT	--	---	---
CS-0004	CS Pump 2B Disch. IB Check	2	F05037	E8	AC	8	CK	SA	NC	--	CV(DI)	RR9	---	---
											LT	--	---	---
CS-0005	CS Pump 2B Disch. IB Check	2	F05037	D8	AC	8	CK	SA	NC	--	CV(DI)	RR9	---	---
											LT	--	---	---
CS-0006	CS Pump 2C Disch. IB Check	2	F05037	C7	AC	8	CK	SA	NC	--	CV(DI)	RR9	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0033A	RCP 2A Seal Injection OB Isol.	2	F05005	C8	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
MOV-0033B	RCP 2B Seal Injection OB Isol.	2	F05005	C8	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
MOV-0033C	RCP 2C Seal Injection OB Isol.	2	F05005	C8	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
MOV-0033D	RCP 2D Seal Injection OB Isol.	2	F05005	C8	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
CV-0034A	RCP 2A Seal Injection IB Check	2	F05005	C8	AC	2	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
CV-0034B	RCP 2B Seal Injection IB Check	2	F05005	C8	AC	2	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
CV-0034C	RCP 2C Seal Injection IB Check	2	F05005	C8	AC	2	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
CV-0034D	RCP 2D Seal Injection IB Check	2	F05005	C8	AC	2	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CV-0078	RCP Seal Inj. Return IB Ck.	2	F05005	F3	AC	.75	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---
MOV-0077	RCP Seal Inj. Return IB Isol.	2	F05005	F3	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
MOV-0079	RCP Seal Inj. Return OB Isol.	2	F05005	F3	A	2	D	MO	NO	FAI	Q(CS),R,MT	RR2,10	10	---
											LT	--	---	---
LCV-0465	Letdown Isolation	1	F05005	H8	B	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,35	16	---
LCV-0468	Letdown Isolation	1	F05005	H7	B	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,35	17	---
FV-0011	Letdown Flow Orifice Header Isolation	2	F05005		B	3	GL	AO	NO	FC	Q(CS),R,MT (NT)	RR2,7,35	2	---
CV-0022	Letdown IB Check	2	F05005	H3	AC	.75	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---
MOV-0023	Letdown IB Isolation	2	F05005	H3	A	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,36	15	---
											LT	--	---	---
MOV-0024	Letdown OB Isolation	2	F05005	H3	A	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,36	10	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CV-0157	RC Purification OB Isolation	2	F05006	F2	A	4	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
CV-0158	RC Purification IB Check	2	F05006	F2	AC	4	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---
MOV-0113A	VCT Outlet Valve	2	F05007	E4	B	6	GT	MO	NO	FAI	Q(CS),R,MT	RR2,11	16	---
MOV-0112B	VCT Outlet Valve	2	F05007	E4	B	6	GT	MO	NO	FAI	Q(CS),R,MT	RR2,11	16	---
CV-0224	RWST to Chg. Pump Suction	2	F05007	C3	C	6	CK	SA	NC	--	CV(CS)	RR2,12	---	---
MOV-0113B	RWST to Chg. Pump Suction	2	F05007	C4	B	6	GT	MO	NC	FAI	Q(CS),R,MT	RR2,12	---	17
MOV-0112C	RWST to Chg. Pump Suction	2	F05007	C4	B	6	GT	MO	NC	FAI	Q(CS),R,MT	RR2,12	---	16
CV-235A	Cent. Chg. Pp. 2A Disch. Ck.	2	F05007	B6	C	3	CK	SA	NC	--	CV	--	---	---
CV-235B	Cent. Chg. Pp. 2B Disch. Ck.	2	F05007	D6	C	3	CK	SA	NC	--	CV	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CV-234A	Cent. Chg. Pp. 2A Recirc. Ck.	2	F05007	C6	C	2	CK	SA	NC	--	CV	--	---	---
CV-234B	Cent. Chg. Pp. 2B Recirc. Ck.	2	F05007	D6	C	2	CK	SA	NC	--	CV	--	---	---
FCV-0201	Cent. Chg. Pp. 2A Recirc.	2	F05007	C6	B	2	GL	AO	NC	FO	Q,R,MT	--	---	21
FCV-0202	Cent. Chg. Pp. 2B Recirc.	2	F05007	D6	B	2	GL	AO	NC	FO	Q,R,MT	--	---	19
FCV-0205	Charging Flow Control Valve	2	F05007	E7	B	3	GL	AO	NT	FO	Q(CS),R,MT	RR2,13	---	7
MOV-0025	Charging OB Isolation	2	F05005	G3	A	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,14	15	---
											LT	--	---	---
CV-0026	Charging IB Check	2	F05005	G3	AC	4	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
CV-0001	Normal Charging Check	1	F05005	G8	C	4	CK	SA	NO	--	CV(CS)	RR2,37	---	---
CV-0002	Normal Charging Check	1	F05005	G8	C	4	CK	SA	NO	--	CV(CS)	RR2,37	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CV-0004	Alternate Charging Check	1	F05005	F8	C	4	CK	SA	NC	--	CV(CS)	RR2.37	---	---
CV-0005	Alternate Charging Check	1	F05005	F8	C	4	CK	SA	NC	--	CV(CS)	RR2.37	---	---
LV-3119	Aux. Press. Spray Control Vlv.	1	F05005	F7	B	2	GL	AO	NC	FC	Q(CS),R,MT	RR2.15	13	25
CV-0009	Aux. Press. Spray Check	1	F05005	F8	C	2	CK	SA	NC	--	CV(CS)	RR2.15	---	---
CV-0334	Boric Acid Gravity Feed Check	3	F05009	D3	C	3	CK	SA	NC	--	CV(CS)	RR2.16	---	---
CV-0338	Boric Acid Trans. Pump 2A Disch. Check	3	F05009	D6	C	4	CK	SA	NC	--	CV(CS)	RR2.16	---	---
CV-0349	Boric Acid Trans. Pump 2B Disch. Check	3	F05009	C6	C	4	CK	SA	NC	--	CV(CS)	RR2.16	---	---
CV-0351	Boric Acid Trans. Pump 2A Recirc. Check	3	F05009	E6	C	.75	CK	SA	NC	--	CV	--	---	---
CV-0346	Boric Acid Trans. Pump 2B Recirc. Check	3	F05009	D5	C	.75	CK	SA	NC	--	CV	--	---	---
MOV-0218	Boric Acid Trans. To Chg. Pump Suction	2	F05007	B3	B	4	GT	MO	NC	FAI	Q,R,MT	--	---	10
CV-0217	Boric Acid Trans. To Chg. Pump Suction	2	F05007	B3	C	4	CK	SA	NC	--	CV(CS)	RR2.16	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
CV-0670	Chg. Pump Disch. Check	2	F05007	D6	C	4	CK	SA	NO	--	CV	--	---	---
MOV-0003	Normal Charging Isolation	2	F05005	G7	B	4	GT	MO	NO	FAI	Q(CS),R,MT	RR2,37	11	13
MOV-0006	Alternate Charging Isolation	2	F05005	G7	B	4	GT	MO	NC	FAI	Q(CS),R,MT	RR2,37	10	11
MOV-0082	Excess Letdown Isolation	1	F05005	F5	B	2	D	MO	NC	FAI	Q,R,MT	--	13	---
MOV-0083	Excess Letdown Isolation	1	F05005	F5	B	2	D	MO	NC	FAI	Q,R,MT	--	12	---
MOV-8377A	CCP 2A Discharge Isolation	2	F05007	D6	B	3	GT	MO	NO	FAI	Q,R,MT	--	15	15
MOV-8377B	CCP 2B Discharge Isolation	2	F05007	C6	B	3	GT	MO	NO	FAI	Q,R,MT	--	15	16
MOV-8348	CCP 2A to Seal Water Isolation	2	F05007	B6	B	2	GL	MO	NC	FAI	Q,R,MT	--	13	13

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
DW-0501	DW To CTMT OB Isolation	2	F05034	F4	A	2	D	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
DW-0502	DW To CTMT IB Check	2	F05034	F3	AC	2	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0064	CTMT Sump Disch. IB Isol.	2	F05030	G7	A	3	GT	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
FV-7800	CTMT Sump Disch. OB Isol.	2	F05030	G6	A	3	GT	AO	NO	FC	Q,R,MT	--	10	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST Q
EW-0006	ECW Pump 2A Disch. Check	3	F05038	H4	C	30	CK	SA	NO	--	CV	--	---	---
EW-0042	ECW Pump 2B Disch. Check	3	F05038	E4	C	30	CK	SA	NO	--	CV	--	---	---
EW-0079	ECW Pump 2C Disch. Check	3	F05038	C4	C	30	CK	SA	NO	--	CV	--	---	---
MOV-0121	ECW Pump 2A Disch. Isolation	3	F05038	H4	B	30	B	MO	NO	FAI	Q,R,MT	--	---	14
MOV-0137	ECW Pump 2B Disch. Isolation	3	F05038	E4	B	30	B	MO	NO	FAI	Q,R,MT	--	---	12
MOV-0151	ECW Pump 2C Disch. Isolation	3	F05038	C4	B	30	B	MO	NO	FAI	Q,R,MT	--	---	15
EW-0253	ECW Screen Wash Pump 2A Discharge Check	3	F05039	D7	C	3	CK	SA	NO	--	CV	--	---	---
EW-0254	ECW Screen Wash Pump 2B Discharge Check	3	F05039	D5	C	3	CK	SA	NO	--	CV	--	---	---
EW-0255	ECW Screen Wash Pump 2C Discharge Check	3	F05039	D2	C	3	CK	SA	NO	--	CV	--	---	---
FV-6914	ECW Screen Wash Pump 2A Discharge Isolation	3	F05039	D7	B	3	GL	AO	NO	FO	Q,R,MT	--	---	6
FV-6924	ECW Screen Wash Pump 2B Discharge Isolation	3	F05039	D5	B	3	GL	AO	NO	FO	Q,R,MT	--	---	7
FV-6934	ECW Screen Wash Pump 2C Discharge Isolation	3	F05039	D3	B	3	GL	AO	NO	FO	Q,R,MT	--	---	4

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
EW-0262	ECW Loop A to Essential CHW Chillers	3	F05038	H6	C	14	CK	SA	NO	--	CV	--	---	---
EW-0263	ECW Loop B to Essential CHW Chillers	3	F05038	F6	C	14	CK	SA	NO	--	CV	--	---	---
EW-0264	ECW Loop C to Essential CHW Chillers	3	F05038	C6	C	14	CK	SA	NO	--	CV	--	---	---
FV-6935	ECW Loop A Drain to ECW Sump	3	F05038	F7	B	4	GT	AO	NO	FC	Q,R,MT	--	5	---
FV-6936	ECW Loop B Drain to ECW Sump	3	F05038	C7	B	4	GT	AO	NO	FC	Q,R,MT	--	7	---
FV-6937	ECW Loop C Drain to ECW Sump	3	F05038	A7	B	4	GT	AO	NO	FC	Q,R,MT	--	8	---
PV-6904	Essen. CHW Chiller 22A Outlet Pressure Control Valve	3	F05038	F6	8	B	B	HO	NT	FC	Q,R,MT	--	10	10
PV-6905	Essen. CHW Chiller 22B Outlet Pressure Control Valve	3	F05038	D6	8	B	B	HO	NT	FC	Q,R,MT	--	10	10
PV-6906	Essen. CHW Chiller 22C Outlet Pressure Control Valve	3	F05038	A6	8	B	B	HO	NT	FC	Q,R,MT	--	10	10
PV-6854	Essen. CHW Chiller 21A Outlet Pressure Control Valve	3	F05038	F7	B	6	B	HO	NT	FC	Q,R,MT	--	10	10
PV-6864	Essen. CHW Chiller 21B Outlet Pressure Control Valve	3	F05038	D7	B	6	B	HO	NT	FC	Q,R,MT	--	10	10
PV-6874	Essen. CHW Chiller 21C Outlet Pressure Control Valve	3	F05038	A7	B	6	B	HO	NT	FC	Q,R,MT	--	10	10

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XFC-0006C	In CTMT Spent Fuel Cooling IB Isolation	2	F05028	B5	A	10	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XFC-0007C	In CTMT Spent Fuel Cooling OB Isolation	2	F05028	B4	A	10	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XFC-0013E	In CTMT Spent Fuel Cooling OB Isolation	2	F05028	B6	A	10	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XFC-0013F	In CTMT Spent Fuel Cooling IB Isolation	2	F05028	B6	A	10	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XFC-0050	In CTMT Refueling Cavity IB Isolation	2	F05028	B6	A	3	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST Q
MOV-0756	Fire Prot. to CTMT OB Isol.	2	F05047	E8	A	6	GT	MO	NC	FAI	Q,R,MT	--	10	---
											LT	--	---	---
FP-0943	Fire Prot. to CTMT IB Isol.	2	F05047	E8	AC	6	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-7141	FWIV	2	F00063	G8	B	18	GT	HO	NO	FC	Q(CSP),R,MT	RR2.17	10	---
FV-7142	FWIV	2	F00063	G6	B	18	GT	HO	NO	FC	Q(CSP),R,MT	RR2.17	10	---
FV-7143	FWIV	2	F00063	G4	B	18	GT	HO	NO	FC	Q(CSP),R,MT	RR2.17	10	---
FV-7144	FWIV	2	F00063	G2	B	18	GT	HO	NO	FC	Q(CSP),R,MT	RR2.17	10	---
FV-7148A	FWIV Bypass	2	F00063	G7	B	3	GL	AO	NC	FC	Q,R,MT	--	3	---
FV-7147A	FWIV Bypass	2	F00063	G5	B	3	GL	AO	NC	FC	Q,R,MT	--	5	---
FV-7146A	FWIV Bypass	2	F00063	G3	B	3	GL	AO	NC	FC	Q,R,MT	--	3	---
FV-7145A	FWIV Bypass	2	F00063	G1	B	3	GL	AO	NC	FC	Q,R,MT	--	4	---
FV-7189	FW to AF Warm-up	2	F00063	F8	B	3	GL	AO	NC	FC	Q(CS),R,MT	RR2.38	5	---
FV-7190	FW to AF Warm-up	2	F00063	F6	B	3	GL	AO	NC	FC	Q(CS),R,MT	RR2.38	5	---
FV-7191	FW to AF Warm-up	2	F00063	F4	B	3	GL	AO	NC	FC	Q(CS),R,MT	RR2.38	5	---
FV-7192	FW to AF Warm-up	2	F00063	F2	B	3	GL	AO	NC	FC	Q(CS),R,MT	RR2.38	5	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FCV-0551	FW Regulator Valve	NS	F00063	D8	B	16	A	AO	NT	FC	Q(CS),R,MT	RR2.18	7	---
FCV-0552	FW Regulator Valve	NS	F00063	D6	B	16	A	AO	NT	FC	Q(CS),R,MT	RR2.18	6	---
FCV-0553	FW Regulator Valve	NS	F00063	D4	B	16	A	AO	NT	FC	Q(CS),R,MT	RR2.18	6	---
FCV-0554	FW Regulator Valve	NS	F00063	D2	B	16	A	AO	NT	FC	Q(CS),R,MT	RR2.18	7	---
FV-7151	FW Regulator Bypass	NS	F00063	D7	B	4	GL	AO	NC	FC	Q(CS),R,MT	RR2.19	7	---
FV-7152	FW Regulator Bypass	NS	F00063	D5	B	4	GL	AO	NC	FC	Q(CS),R,MT	RR2.19	5	---
FV-7153	FW Regulator Bypass	NS	F00063	D3	B	4	GL	AO	NC	FC	Q(CS),R,MT	RR2.19	5	---
FV-7154	FW Regulator Bypass	NS	F00063	D1	B	4	GL	AO	NC	FC	Q(CS),R,MT	RR2.19	6	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0007	Normal Purge Supply OB Isol.	2	V00018	G3	A	48	B	MO	NC	FAI	Q(CS),R,MT	RR2.20	60	---
											LT(CP)	--	---	---
MOV-0008	Normal Purge Supply IB Isol.	2	V00018	G2	A	48	B	MO	NC	FAI	Q(CS),R,MT	RR2.20	60	---
											LT(CP)	--	---	---
MOV-0009	Normal Purge Exhaust IB Isol.	2	V00018	C7	A	48	B	MO	NC	FAI	Q(CS),R,MT	RR2.20	60	---
											LT(CP)	--	---	---
MOV-0010	Normal Purge Exhaust OB Isol.	2	V00018	C6	A	48	B	MO	NC	FAI	Q(CS),R,MT	RR2.20	60	---
											LT(CP)	--	---	---
FV-9776	Supplementary Purge Supply OB Isol.	2	V00019	F4	A	18	B	AO	NC	FC	Q(CS),R,MT	RR2.21	4	---
											LT(CP)	--	---	---
MOV-0003	Supplementary Purge Supply IB Isol.	2	V00019	F3	A	18	B	MO	NC	FAI	Q(CS),R,MT	RR2.21	10	---
											LT(CP)	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0005	Supplementary Purge Exhaust IB Isol.	2	V00019	C7	A	18	B	MO	NC	FAI	Q(CS),R,MT	RR2,21	10	---
											LT(CP)	--	---	---
FV-9777	Supplementary Purge Exhaust OB Isol.	2	V00019	C6	A	18	B	AO	NC	FC	Q(CS),R,MT	RR2,21	4	---
											LT(CP)	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
IA-0541	Inst. Air to CTMT IB Check	2	F05040	D4	AC	2	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---
FV-8565	Inst. Air to CTMT OB Isol.	2	F05040	D4	A	2	BL	AO	NO	FC	Q(CS),R,MT (MT)	RR2,7, 22	2	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	PR/C	ST C	ST O
PV-7411	Main Steam Line 1 Porv	2	F00016	H6	B	10	GT	HO	NC	FC	Q(CS),R,MT	RR2,23	42	41
PV-7421	Main Steam Line 2 Porv	2	F00016	F6	B	10	GT	HO	NC	FC	Q(CS),R,MT	RR2,23	31	32
PV-7431	Main Steam Line 3 Porv	2	F00016	E6	B	10	GT	HO	NC	FC	Q(CS),R,MT	RR2,23	30	30
PV-7441	Main Steam Line 4 Porv	2	F00016	C6	B	10	GT	HO	NC	FC	Q(CS),R,MT	RR2,23	42	38
PSV-7410	Main Steam Line 1 Safety	2	F00016	H6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7410A	Main Steam Line 1 Safety	2	F00016	H6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7410B	Main Steam Line 1 Safety	2	F00016	H5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7410C	Main Steam Line 1 Safety	2	F00016	H5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7410D	Main Steam Line 1 Safety	2	F00016	H5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7420	Main Steam Line 2 Safety	2	F00016	F6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7420A	Main Steam Line 2 Safety	2	F00016	F6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7420B	Main Steam Line 2 Safety	2	F00016	F5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7420C	Main Steam Line 2 Safety	2	F00016	F5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7420D	Main Steam Line 2 Safety	2	F00016	F5	C	6x10	PR	SA	NC	--	SRV	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
PSV-7430	Main Steam Line 3 Safety	2	F00016	E6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7430A	Main Steam Line 3 Safety	2	F00016	E6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7430B	Main Steam Line 3 Safety	2	F00016	E5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7430C	Main Steam Line 3 Safety	2	F00016	E5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7430D	Main Steam Line 3 Safety	2	F00016	E5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7440	Main Steam Line 4 Safety	2	F00016	C6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7440A	Main Steam Line 4 Safety	2	F00016	C6	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7440B	Main Steam Line 4 Safety	2	F00016	C5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7440C	Main Steam Line 4 Safety	2	F00016	C5	C	6x10	PR	SA	NC	--	SRV	--	---	---
PSV-7440D	Main Steam Line 4 Safety	2	F00016	C5	C	6x10	PR	SA	NC	--	SRV	--	---	---
FV-7900A	Main Steam Line 1 Drain	2	F00016	G4	B	2	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-7901A	Main Steam Line 2 Drain	2	F00016	E4	B	2	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-7902A	Main Steam Line 3 Drain	2	F00016	D4	B	2	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-7903A	Main Steam Line 4 Drain	2	F00016	B4	B	2	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FSV-7414	MSIV	2	F00016	G4	B	30	GT	AO	NO	FC	Q(CSP),R,MT	RR2.24	5	---
FSV-7424	MSIV	2	F00016	F4	B	30	GT	AO	NO	FC	Q(CSP),R,MT	RR2.24	5	---
FSV-7434	MSIV	2	F00016	D4	B	30	GT	AO	NO	FC	Q(CSP),R,MT	RR2.24	5	---
FSV-7444	MSIV	2	F00016	C4	B	30	GT	AO	NO	FC	Q(CSP),R,MT	RR2.24	5	---
FV-7412	MSIV Bypass	2	F00016	G4	B	4	GT	AO	NC	FC	Q,R,MT	--	6	---
FV-7422	MSIV Bypass	2	F00016	F4	B	4	GT	AO	NC	FC	Q,R,MT	--	5	---
FV-7432	MSIV Bypass	2	F00016	D4	B	4	GT	AO	NC	FC	Q,R,MT	--	4	---
FV-7442	MSIV Bypass	2	F00016	C4	B	4	GT	AO	NC	FC	Q,R,MT	--	4	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
PO-0203	RCP Oil Supply OB Isol.	2	F05042	E3	A	2	D	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
PO-0204	RCP Oil Supply IB Isol.	2	F05042	E3	A	2	D	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
PO-0217	RCP Oil Drain IB Isol.	2	F05042	B3	A	2	D	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
PO-0218	RCP Oil Drain OB Isol.	2	F05042	B3	A	2	D	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4450	Press. Vapor Sample IB Isol.	2	Z00045	G8	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-4452	Press. Vapor Sample OB Isol.	2	Z00045	G7	A	1	GL	AO	NC	FC	Q,R,MT	--	7	---
											LT	--	---	---
FV-4451	Press. Liquid Sample IB Isol.	2	Z00045	G8	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-4451B	Press. Liquid Sample OB Isol.	2	Z00045	G7	A	1	GL	AO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4454	RC Hot Leg #1 Sample IB Isol.	2	Z00045	F8	A	1	GT	SO	NC	FC	Q,R,MT(MT)	RR7	2	---
											LT	--	---	---
FV-4455	RC Hot Leg #3 Sample IB Isol.	2	Z00045	E8	A	1	GT	SO	NC	FC	Q,R,MT(MT)	RR7	2	---
											LT	--	---	---
FV-4456	RC Hot Leg Sample OB Isol.	2	Z00045	F7	A	1	GL	AO	NC	FC	Q,R,MT	--	10	---
											LT	--	---	---
FV-4823	RHR Sample IB Isol.	2	Z00045	D8	A	1	GT	SO	NC	FC	Q,R,MT(MT)	RR7	2	---
											LT	--	---	---
FV-4461	RHR Sample OB Isol.	2	Z00045	D7	A	1	GL	AO	NC	FC	Q,R,MT	--	5	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4824	SI Accum. Sample IB Isol.	2	2005[illegible]	B8	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-4466	SI Accum. Sample OB Isol.	2	2005[illegible]	B7	A	1	GL	AO	NC	FC	Q,R,MT	--	4	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RP/C	ST C	ST O
MOV-0001	CTMT Rad. Mon. Inlet IB Isol.	2	V00017	G3	A	1	BL	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
MOV-0003	CTMT Rad. Mon. Return IB Isol.	2	V00017	F3	A	1	BL	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
MOV-0004	CTMT Pad. Mon. Inlet OB Isol.	2	V00017	G3	A	1	BL	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
MOV-0006	CTMT Rad. Mon. Return OB Isol.	2	V00017	F3	A	1	BL	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-3657A	Inboard Reactor Head Vent	1	F05001	E3	A	1	GL	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT(PO)	C25	---	---
FV-3657B	Inboard Reactor Head Vent	1	F05001	D3	A	1	GL	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT(PO)	C25	---	---
FV-3658A	Outboard Reactor Head Vent	1	F05001	E3	A	1	GL	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT(PO)	C25	---	---
FV-3658B	Outboard Reactor Head Vent	1	F05001	D3	A	1	GL	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT(PO)	C25	---	---
HCV-0601	Reactor Head Vent Block Valve	2	F05001	E2	B	1	GL	SO	NC	FC	Q,R,MT	--	9	10
HCV-0602	Reactor Head Vent Block Valve	2	F05001	D2	B	1	GL	SO	NC	FC	Q,R,MT	--	11	10
PSV-3450	Pressurizer Safety	1	F05003	F7	C	6x8	PR	SA	NC	--	SRV	--	---	---
PSV-3451	Pressurizer Safety	1	F05003	F6	C	6x8	PR	SA	NC	--	SRV	--	---	---
PSV-3452	Pressurizer Safety	1	F05003	F4	C	6x8	PR	SA	NC	--	SRV	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL FAIL	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0001A	PORV Block Valve	1	F05003	D8	B	3	GT	MO	NO	FAI	Q,R,MT	--	13	12
MOV-0001B	PORV Block Valve	1	F05003	E8	B	3	GT	MO	NO	FAI	Q,R,MT	--	14	13
PCV-0655A	PORV	1	F05003	D8	A	3	GL	SO	NC	FC	Q(CS),R,MT	RR2,26	---	2
											LT(PO)	C25	---	---
PCV-0656A	PORV	1	F05003	E8	A	3	GL	SO	NC	FC	Q(CS),R,MT	RR2,26	---	2
											LT(PO)	C25	---	---
FV-3652	Nitrogen to PRT OB Isol.	2	F05004	F3	A	1	BL	AO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-3653	Nitrogen to PRT IB Isol.	2	F05004	F4	A	1	GT	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-3651	Reactor Makeup Water to PRT OB Isol.	2	F05004	E2	A	3	BL	AO	NC	FC	Q,R,MT	--	4	---
											LT	--	---	---
XRC-0046	Reactor Makeup Water to PRT IB Check	2	F05004	E4	AC	3	CK	SA	NO	--	CV(RR)	RR8	---	---
											LT	--	---	---

Unit 2 IST Valve List
Reactor Head Degassing - RD

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
RD-0008	Degassing Line IB Isol.	2	FO5046	E7	A	3	BL	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
RD-0010	Degassing Line OB Isol.	2	FO5046	E7	A	3	BL	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0060A	RHR Pump 2A IB Suction Isol.	1	F20000	B8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	119	119
											LT(PIV)	--	---	---
MOV-0060B	RHR Pump 2B IB Suction Isol.	1	F20000	D8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	116	116
											LT(PIV)	--	---	---
MOV-0060C	RHR Pump 2C IB Suction Isol.	1	F20000	G8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	115	115
											LT(PIV)	--	---	---
MOV-0061A	RHR Pump 2A OB Suction Isol.	1	F20000	B8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	119	119
											LT(PIV)	--	---	---
MOV-0061B	RHR Pump 2B OB Suction Isol.	1	F20000	D8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	113	113
											LT(PIV)	--	---	---
MOV-0061C	RHR Pump 2C OB Suction Isol.	1	F20000	G8	A	12	GT	MO	NC	FAI	Q(CS),R,MT	RR2.27	114	115
											LT(PIV)	--	---	---
XRH-0065A	RHR Pump 2A Disch. Check	2	F20000	B6	C	8	CK	SA	NC	--	CV(CSP)	RR2.28	---	---
XRH-0065B	RHR Pump 2B Disch. Check	2	F20000	D6	C	8	CK	SA	NC	--	CV(CSP)	RR2.28	---	---
XRH-0065C	RHR Pump 2C Disch. Check	2	F20000	G6	C	8	CK	SA	NC	--	CV(CSP)	RR2.28	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XRH-0063B	RHR Pump 2B to RWST IB Isol.	2	F20000	D6	A	8	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XRH-0064B	RHR Pump 2B to RWST OB Isol.	2	F20000	D5	A	8	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XRH-0063C	RHR Pump 2C to RWST IB Isol.	2	F20000	F6	A	8	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
XRH-0064C	RHR Pump 2C to RWST OB Isol.	2	F20000	F5	A	8	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
MOV-0067A	RHR Pump 2A Recirc.	2	F20000	A6	B	4	GT	MO	NC	FAI	Q,R,MT	--	9	11
MOV-0067B	RHR Pump 2B Recirc.	2	F20000	C6	B	4	GT	MO	NC	FAI	Q,R,MT	--	9	11
MOV-0067C	RHR Pump 2C Recirc.	2	F20000	F6	B	4	GT	MO	NC	FAI	Q,R,MT	--	9	11
XRH-0068A	RHR Pump 2A Recirc. Check	2	F20000	A6	C	4	CK	SA	NC	--	CV	--	---	---
XRH-0068B	RHR Pump 2B Recirc. Check	2	F20000	C6	C	4	CK	SA	NC	--	CV	--	---	---
XRH-0068C	RHR Pump 2C Recirc. Check	2	F20000	F6	C	4	CK	SA	NC	--	CV	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0019A	RHR 2A to Hot Leg Injection	2	F20000	C3	B	8	GT	MO	NC	FAI	Q,R,MT	--	15	15
MOV-0019B	RHR 2B to Hot Leg Injection	2	F20000	E3	B	8	GT	MO	NC	FAI	Q,R,MT	--	11	12
MOV-0019C	RHR 2C to Hot Leg Injection	2	F20000	H3	B	8	GT	MO	NC	FAI	Q,R,MT	--	15	15
XRH-0020A	RHR 2A to Hot Leg Check	1	F20000	C2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
XRH-0020B	RHR 2B to Hot Leg Check	1	F20000	E2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
XRH-0020C	RHR 2C to Hot Leg Check	1	F20000	G2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
MOV-0031A	RHR 2A to Cold Leg Injection	2	F20000	B3	B	8	GT	MO	NO	FAI	Q,R,MT	--	15	15
MOV-0031B	RHR 2B to Cold Leg Injection	2	F20000	D3	B	8	GT	MO	NO	FAI	Q,R,MT	--	11	13
MOV-0031C	RHR 2C to Cold Leg Injection	2	F20000	G3	B	8	GT	MO	NO	FAI	Q,R,MT	--	15	15

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XRH-0032A	RHR 2A to Cold Leg Check	1	F20000	B2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
XRH-0032B	RHR 2B to Cold Leg Check	1	F20000	D2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
XRH-0032C	RHR 2C to Cold Leg Check	1	F20000	G2	AC	8	CK	SA	NC	--	CV(CS)	RR2.29	---	---
											LT(PIV)	--	---	---
HCV-864	RHR 2A HTX Outlet	2	F20000	B4	B	8	B	AO	NC	FO	Q(CS),R,MT	RR2.30	---	39
HCV-865	RHR 2B HTX Outlet	2	F20000	D4	B	8	B	AO	NC	FO	Q(CS),R,MT	RR2.30	---	40
HCV-866	RHR 2C HTX Outlet	2	F20000	G4	B	8	B	AO	NC	FO	Q(CS),R,MT	RR2.30	---	35
FCV-851	RHR 2A HTX Bypass	2	F20000	C5	B	8	B	AO	NC	FC	Q(CS),R,MT	RR2.30	38	---
FCV-852	RHR 2B HTX Bypass	2	F20000	E5	B	8	B	AO	NC	FC	Q(CS),R,MT	RR2.30	51	---
FCV-853	RHR 2C HTX Bypass	2	F20000	H5	B	8	B	AO	NC	FC	Q(CS),R,MT	RR2.30	36	---
MOV-0066A	RHR 2A to CVCS Letdown	2	F20000	A4	B	4	GT	MO	NC	FAI	Q,R,MT	--	11	12
MOV-0066B	RHR 2B to CVCS Letdown	2	F20000	D2	B	4	GT	MO	NC	FAI	Q,R,MT	--	11	11

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
RH-0166	RCP Seal Standpipe 2A to RHR Loop 2A	2	F20000	C5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---
RH-0174	RCP Seal Standpipe 2A to RHR Loop 2A	2	F20000	C5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---
RH-0168	RCP Seal Standpipe 2B to RHR Loop 2B	2	F20000	F5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---
RH-0167	RCP Seal Standpipe 2B to RHR Loop 2B	2	F20000	F5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---
RH-0170	RCP Seal Standpipe 2C to RHR Loop 2C	2	F20000	H5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---
RH-0169	RCP Seal Standpipe 2C to RHR Loop 2C	2	F20000	H5	AC	.75	CK	SA	NC	--	CV(NA)	C41	---	---
											LT(PO)	C41	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-7659	RM to CVCS Blend Isol.	3	F05033	F7	B	4	GL	AO	NO	FC	Q,P,MT	--	21	---
FV-7663	RM to CVCS Blend Isol.	3	F05033	F7	B	4	GL	AO	NO	FC	Q,P,MT	--	26	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
SA-0504	Service Air to CTMT OB Isol.	2	F05041	C4	A	2	BL	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SA-0505	Service Air to CTMT IB Check	2	F05041	D4	AC	2	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-4189	SG 2A to Sec. Sampling Isol.	2	F20001	E5	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4189A	SG 2A to Sec. Sampling Isol.	2	F20001	E5	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4188	SG 2B to Sec. Sampling Isol.	2	F20001	H1	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4188A	SG 2B to Sec. Sampling Isol.	2	F20001	H1	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4187	SG 2C to Sec. Sampling Isol.	2	F20001	D1	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4187A	SG 2C to Sec. Sampling Isol.	2	F20001	D1	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4186	SG 2D to Sec. Sampling Isol.	2	F20001	D5	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4186A	SG 2D to Sec. Sampling Isol.	2	F20001	D5	B	1	GT	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
FV-4153	SG 2A to Flash Tank Isol.	2	F20001	G5	B	4	GT	AO	NO	FC	Q,R,MT	--	32	---
FV-4152	SG 2B to Flash Tank Isol.	2	F20001	G1	B	4	GT	AO	NO	FC	Q,R,MT	--	31	---
FV-4151	SG 2C to Flash Tank Isol.	2	F20001	C1	B	4	GT	AO	NO	FC	Q,R,MT	--	33	---
FV-4150	SG 2D to Flash Tank Isol.	2	F20001	C5	B	4	GT	AO	NO	FC	Q,R,MT	--	35	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST Q
	DG 21 Right Bank		8041-											
FV-5435	Cranking Air Valve	3	00108	F2	B	3	GT	AC	NC	FC	Q,MT(NST)	RR40	---	---
	DG 21 Left Bank		8041-											
FV-5434	Cranking Air Valve	3	00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
	DG 22 Right Bank		8041-											
FV-5535	Cranking Air Valve	3	00108	F2	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
	DG 22 Left Bank		8041-											
FV-5534	Cranking Air Valve	3	00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
	DG 23 Right Bank		8041-											
FV-5635	Cranking Air Valve	3	00108	F2	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
	DG 23 Left Bank		8041-											
FV-5634	Cranking Air Valve	3	00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0001A	RWST Isolation	2	F05013	G3	B	16	GT	MO	NO	FAI	Q,R,MT	--	19	19
MOV-0001B	RWST Isolation	2	F05014	H2	B	16	GT	MO	NO	FAI	Q,R,MT	--	19	19
MOV-0001C	RWST Isolation	2	F05015	H2	B	16	GT	MO	NO	FAI	Q,R,MT	--	19	19
XSI-0002A	RWST Outlet Check	2	F05013	G3	C	16	CK	SA	NC	--	CV(PRR)	RR31	---	---
XSI-0002B	RWST Outlet Check	2	F05014	H2	C	16	CK	SA	NC	--	CV(PRR)	RR31	---	---
XSI-0002C	RWST Outlet Check	2	F05015	H2	C	16	CK	SA	NC	--	CV(PRR)	RR31	---	---
FV-3936	RWST to SFPCCS RWPP	2	F05013	F2	B	3	GL	AO	NC	FC	Q,R,MT	--	14	---
FV-3937	RWST to SFPCCS RWPP	2	F05013	F2	B	3	GL	AO	NC	FC	Q,R,MT	--	16	---
MOV-0016A	Emergency Sump 2A Outlet	2	F05013	B5	A	16	GT	MO	NC	FAI	Q,R,MT	--	19	19
											LT	--	---	---
MOV-0016B	Emergency Sump 2B Outlet	2	F05014	B4	A	16	GT	MO	NC	FAI	Q,R,MT	--	19	19
											LT	--	---	---
MOV-0016C	Emergency Sump 2C Outlet	2	F05015	B4	A	16	GT	MO	NC	FAI	Q,R,MT	--	19	19
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0014A	LHSI Pp. 2A Recirc.	2	F05013	D3	B	2	D	MO	NC	FAI	Q,R,MT	--	11	13
MOV-0013A	LHSI Pp. 2A Recirc.	2	F05013	D3	B	2	D	MO	NO	FAI	Q,R,MT	--	13	14
MOV-0014B	LHSI Pp. 2B Recirc.	2	F05014	E3	B	2	D	MO	NC	FAI	Q,R,MT	--	12	14
MOV-0013B	LHSI Pp. 2B Recirc.	2	F05014	E3	B	2	D	MO	NO	FAI	Q,R,MT	--	12	14
MOV-0014C	LHSI Pp. 2C Recirc.	2	F05015	D3	B	2	D	MO	NC	FAI	Q,R,MT	--	13	14
MOV-0013C	LHSI Pp. 2C Recirc.	2	F05015	D3	B	2	D	MO	NO	FAI	Q,R,MT	--	13	14
MOV-0018A	LHSI Pp. 2A Disch.	2	F05013	C4	A	8	GT	MO	NO	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0018B	LHSI Pp. 2B Disch.	2	F05014	D4	A	8	GT	MO	NO	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0018C	LHSI Pp. 2C Disch.	2	F05015	D4	A	8	GT	MO	NO	FAI	Q,R,MT	--	15	15
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XSI-0030A	LHSI Pp. 2A Disch. Check	2	F05013	D5	AC	8	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
XSI-0030B	LHSI Pp. 2B Disch. Check	2	F05014	D4	AC	8	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
XSI-0030C	LHSI Pp. 2C Disch. Check	2	F05015	D4	AC	8	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
MOV-0011A	HHSI Pp. 2A Recirc.	2	F05013	G4	B	2	D	MO	NC	FAI	Q,R,MT	--	12	14
MOV-0012A	HHSI Pp. 2A Recirc.	2	F05013	G4	B	2	D	MO	NO	FAI	Q,R,MT	--	14	14
MOV-0011B	HHSI Pp. 2B Recirc.	2	F05014	H3	B	2	D	MO	NC	FAI	Q,R,MT	--	12	14
MOV-0012B	HHSI Pp. 2B Recirc.	2	F05014	H3	B	2	D	MO	NO	FAI	Q,R,MT	--	11	13
MOV-0011C	HHSI Pp. 2C Recirc.	2	F05015	G4	B	2	D	MO	NC	FAI	Q,R,MT	--	15	15
MOV-0012C	HHSI Pp. 2C Recirc.	2	F05015	G3	B	2	D	MO	NO	FAI	Q,R,MT	--	13	13

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0004A	HHSI Pp. 2A Disch.	2	FO5013	F5	A	6	GT	MO	NO	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0004B	HHSI Pp. 2B Disch.	2	FO5014	G4	A	6	GT	MO	NO	FAI	Q,R,MT	--	15	15
											LT	--	---	---
MOV-0004C	HHSI Pp. 2C Disch.	2	FO5015	F4	A	6	GT	MO	NO	FAI	Q,R,MT	--	11	11
											LT	--	---	---
XSI-0005A	HHSI Pp. 2A Disch. Check	2	FO5013	F6	AC	6	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
XSI-0005B	HHSI Pp. 2B Disch. Check	2	FO5014	G4	AC	6	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
XSI-0005C	HHSI Pp. 2C Disch. Check	2	FO5015	F5	AC	6	CK	SA	NC	--	CV(PRS)	RR43	---	---
											LT	--	---	---
MOV-0008A	HHSI Pp. 2A Hot Leg Inj.	2	FO5013	F7	B	6	GT	MO	NC	FAI	Q,R,MT	--	12	13
MOV-0008B	HHSI Pp. 2B Hot Leg Inj.	2	FO5014	G7	B	6	GT	MO	NC	FAI	Q,R,MT	--	12	13
MOV-0008C	HHSI Pp. 2C Hot Leg Inj.	2	FO5015	F7	B	6	GT	MO	NC	FAI	Q,R,MT	--	12	12

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0006A	HHSI Pp. 2A Cold Leg Inj.	2	F05013	E7	B	6	GT	MO	NO	FAI	Q,R,MT	--	12	13
MOV-0006B	HHSI Pp. 2B Cold Leg Inj.	2	F05014	F7	B	6	GT	MO	NO	FAI	Q,R,MT	--	12	13
MOV-0006C	HHSI Pp. 2C Cold Leg Inj.	2	F05015	E7	B	6	GT	MO	NO	FAI	Q,R,MT	--	11	12
XSI-0009A	HHSI Pp. 2A Hot Leg OB Check	1	F05013	F7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
XSI-0009B	HHSI Pp. 2B Hot Leg OB Check	1	F05014	G7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
XSI-0009C	HHSI Pp. 2C Hot Leg OB Check	1	F05015	F7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
XSI-0010A	HHSI Pp. 2A Hot Leg IB Check	1	F05013	F8	AC	8	CK	SA	NC	--	CV(CS)	RR2,29	---	---
											LT(PIV)	--	---	---
XSI-0010B	HHSI Pp. 2B Hot Leg IB Check	1	F05014	G8	AC	8	CK	SA	NC	--	CV(CS)	RR2,29	---	---
											LT(PIV)	--	---	---
XSI-0010C	HHSI Pp. 2C Hot Leg IB Check	1	F05015	F8	AC	8	CK	SA	NC	--	CV(CS)	RR2,29	---	---
											LT(PIV)	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XSI-0007A	HHSI Pp. 2A Cold Leg OB Check	1	F05013	E7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
XSI-0007B	HHSI Pp. 2B Cold Leg OB Check	1	F05014	F7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
XSI-0007C	HHSI Pp. 2C Cold Leg OB Check	1	F05015	E7	AC	6	CK	SA	NC	--	CV(RR)	RR32	---	---
											LT(PIV)	--	---	---
FV-3983	SIS Accum. N2 Supply OB Isol.	2	F05016	G2	A	1	GL	AO	NC	FC	Q,R,MT	--	30	---
											LT	--	---	---
SI-0058	SIS Accum. N2 Supply IB Check	2	F05016	G2	AC	1	CK	SA	NC	--	CV(RR)	C5	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
XSI-0046A	SIS Accum. 2A OB Check	1	F05016	F6	AC	12	CK	SA	NC	--	CV(DI)	RR33	---	---
											LT(PIV)	--	---	---
XSI-0046B	SIS Accum. 2B OB Check	1	F05016	D7	AC	12	CK	SA	NC		CV(DI)	RR33	---	---
											LT(PIV)	--	---	---
XSI-0046C	SIS Accum. 2C OB Check	1	F05016	B7	AC	12	CK	SA	NC	--	CV(DI)	RR33	---	---
											LT(PIV)	--	---	---
XSI-0038A	SI Cold Leg 1 IB Check	1	F05016	F7	AC	12	CK	SA	NC	--	CV(CSDI)	RR2,39	---	---
											LT(PIV)	--	---	---
XSI-0038B	SI Cold Leg 2 IB Check	1	F05016	D7	AC	12	CK	SA	NC	--	CV(CSDI)	RR2,39	---	---
											LT(PIV)	--	---	---
XSI-0038C	SI Cold Leg 3 IB Check	1	F05016	B7	AC	12	CK	SA	NC	--	CV(CSDI)	RR2,39	---	---
											LT(PIV)	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST Q
FV-3970	SIS Test Line IB Isol.	1	F05016	F7	A	.75	GL	AO	NC	FC	Q,R,MT	--	8	---
											LT	--	---	---
FV-3971	SIS Test Line OB Isol.	1	F05016	F7	A	.75	GL	AO	NC	FC	Q,R,MT(MT)	RR7	2	---
											LT	--	---	---

Unit 2 IST Valve List
Steam Generator Sludge Lancing - SL

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
SL-0002	Hi Pressure OB Isol.	2	FO5057	B5	A	2	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SL-0004	Hi Pressure IB Isol.	2	FO5057	B6	A	2	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SL-0012	Low Pressure OB Isol.	2	FO5057	E5	A	6	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SL-0014	Low Pressure OB Isol.	2	FO5057	E6	A	6	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SL-0027	Chem. Clng. Ret. IB Isol.	2	FO5057	G6	A	6	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---
SL-0029	Chem. Clng. Ret. OB Isol.	2	FO5057	G5	A	6	GT	M	NC	--	Q(NA)	C4	---	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST Q
FV-4919	RCDT N2 Supply/Vent OB Isol.	2	F05022	G6	A	1	GL	AO	NO	FC	Q,R,MT	--	3	---
											LT	--	---	---
FV-4920	RCDT N2 Supply/Vent IB Isol.	2	F05022	G6	A	1	GL	SO	NC	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
MOV-0312	RCDT Pump Disch. IB Isol.	2	F05022	E3	A	3	GT	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
FV-4913	RCDT Pump Disch. OB Isol.	2	F05022	F3	A	3	GL	AO	NO	FC	Q,R,MT	--	8	---
											LT	--	---	---

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
FV-1025	PAL Air Supply Isol.	2	F05060	G4	A	.5	GL	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-1026	PAL Air Supply Isol.	2	F05060	G4	A	.5	GL	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-1027	PAL Auto Leak Rate Monit Isol.	2	F05060	C4	A	.5	GL	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---
FV-1028	PAL Auto Leak Rate Monit Isol.	2	F05060	C4	A	.5	GL	SO	NO	FC	Q,R,MT(NT)	RR7	2	---
											LT	--	---	---

3.1 Requests for Relief from ASME Boiler and Pressure Vessel Code Section XI Requirements and Clarifications of Valve Testing Methods

RR1

Test Requirement

The stroke time of all power-operated valves shall be measured, and check valves shall be exercised for operability at least once every three (3) months.

Basis for Relief

This valve is a stop check valve with a motor operator. The motor operator may be safely stroked at power; however, the stop check valve can only be exercised (full-stroke) by directing Auxiliary Feedwater Flow into the Steam Generators. The initiation of Auxiliary Feedwater during power operation would result in unwanted thermal shock to the secondary portions of the Steam Generators. An introduction of cold water would also cause unwanted power transients.

Alternate Testing

The valve motor operator will be stroked and timed at least once every three (3) months as required; however, after leaving cold shutdown and prior to entering Mode 2 (Startup) Auxiliary Feedwater will be directed through the valve using one pump flow rate. Verification of flow through the valve will provide assurance that the valve has opened sufficiently to perform its function (full-stroke).

RR2

Test Requirement

IWV-3417(b) and IWV-3523 state that when corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup. A retest showing acceptable operation shall be run following any corrective action before returning valve to service.

Basis for Relief

The plant Technical Specifications provide the requirements and plant conditions necessary for plant startup (i.e. mode changes).

Alternate Testing

The test requirement will be satisfied before the valve is required to be operable in accordance with the plant Technical Specifications.

RR3

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

This check valve is normally closed during normal power operation and can only be exercised (full-stroke) by directing Auxiliary Feedwater flow into the Steam Generators. The initiation of Auxiliary Feedwater during normal power operation would result in unwanted thermal shock and power transients. Flow from the Main Feedwater System cannot be used to exercise this check valve during normal power operation since thermal shock to the Auxiliary Feedwater nozzles would occur by injecting the cooler, stagnant water in the connecting piping and no flow instrumentation is available in this configuration to verify valve full-stroke.

Alternate Testing

After leaving cold shutdown and prior to entering Mode 2 (Startup), Auxiliary Feedwater will be directed through the valve using one pump flow rate. Verification of flow through the valve will provide assurance that the valve has opened sufficiently to perform its function (full-stroke).

C4

Test Requirement

Exercise valves for operability at least once every three (3) months.

Testing Method

This valve is a normally closed containment isolation valve and is passive. The operability testing (full or partial stroke) during either power operation or cold shutdown provides no added assurance of an increase in safety. This valve will be verified closed and leak-tight each refueling outage during performance of LLRT activities in accordance with 10CFR50 Appendix J.

C5

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Testing Method

This valve is a normally closed containment isolation check valve and is passive. The operability testing (full or partial stroke) during either power operation or cold shutdown provides no added assurance of an increase in safety. This valve will be verified closed and leak-tight each refueling outage during performance of LLRT activities in accordance with 10CFR50 Appendix J.

RR6

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

Operability testing (full or partial stroke) of this normally closed check valve is impractical due to plant design.

Alternate Testing

This valve will be required to be partially disassembled every refueling outage and the valve internals will be inspected to ensure no degradation has occurred.

RR7

Test Requirement

IWV-3413(b) requires that the stroke time of all power-operated valves shall be measured to the nearest second for stroke times of 10 seconds or less. IWV-3417 requires that on any one test of power-operated valves, an increase in stroke time of 50% or more from the previous test for valves with stroke times of 10 seconds or less, the test frequency shall be increased to once each month until corrective action is taken.

Basis for Relief

These solenoid-operated valves have very short stroke times and are classified as "rapid-acting" valves. Accurate measurement of stroke time is not practical. In addition, stroke times may vary significantly due to system pressure and/or temperature changes from one test to another.

Alternate Testing

These valves will be required to be full stroked and timed to the nearest second quarterly. Acceptance of the test will be based only on the stroke time limit (not to exceed 2 seconds) and not on the "50%" criteria of IWV-3417.

RR8

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

Due to plant design, it is not practical to verify by any positive means, either directly or indirectly, the operability of these normally open check valves per the requirements of IWV-3522(a).

Alternate Testing

Valve closure will be verified during LLRT activities performed each refueling outage in accordance with 10CFR50 Appendix J.

RR9

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

Operability testing (full or partial stroke) of these normally closed check valves is impractical during power operation or cold shutdown. Stroking these valves with flow would require the spraying of containment which is impractical and may cause equipment damage.

Alternate Testing

The check valves will be verified operable by disassembly of one check valve each refueling outage on a rotating basis for inspection to ensure no degradation has occurred. If the check valve selected during any refueling outage shows signs of unacceptable degradation, all other applicable check valves will be disassembled and inspected during that refueling outage.

RR10

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These normally open valves supply clean, cool water for the RCP seals providing lubrication, cooling and pressurization of the pump seals. Failure of these valves in the closed position during stroking could significantly reduce seal life and possibly cause a plant outage.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three months.

RR11

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves would cause a loss of system function (loss of charging pump normal suction from VCT). Utilizing other suction sources (RWST or Boric Acid Transfer System) would affect reactivity control possibly requiring a plant shutdown. Valves have no partial stroke provisions.

Alternate Testing

These valves will be required to be tested for operability (full stroke) each cold shutdown not to exceed once every three (3) months.

RR12

Test Requirement

Exercise valves and check valves for operability at least once every three (3) months.

Basis for Relief

Exercising of these normally closed valves and check valves at power would connect the suction of the Charging Pumps to the RWST resulting in concentrated boric acid injection into the RCS, causing a resultant power change which is undesired.

Alternate Testing

These valves and check valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR13

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This valve normally is throttled to control charging flow by a flow controller. The valve cannot be full stroked at power without isolating charging flow to the RCS which could cause a loss of normal pressurizer level control possibly causing a plant shutdown.

Alternate Testing

This valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR14

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This normally open valve supplies charging water to the RCS. Isolation of charging during normal power operation could cause a loss of normal pressurizer level control possibly causing a plant shutdown.

Alternate Testing

This valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR15

Test Requirement

Exercise valves and check valves for operability at least once every three (3) months.

Basis for Relief

Exercising of this normally closed valve and check valve would require introduction of cold ($\leq$ 140 °F) spray water into the pressurizer at power creating an undesired transient.

Alternate Testing

This valve and check valve will be required to be exercised for operability (full stroke) at each cold shutdown not to exceed once every three (3) months.

RR16

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

Exercising of this normally closed check valve at power would result in injection of concentrated boric acid into the RCS via the operating charging pump(s) creating an undesired power transient and possible plant shutdown.

Alternate Testing

This check valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR17

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This valve is normally open during power operations and cannot be full stroke tested without isolating Feedwater from the Steam Generators. Isolation of Feedwater would cause an undesirable power transient and possible turbine and reactor trip.

Alternate Testing

This valve will be required to be partial-stroke tested at least once every three (3) months and full-stroke tested each cold shutdown not to exceed once every three (3) months.

RR18

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This valve is normally throttled open during power operations to maintain Steam Generator level by controlling feedwater flow. This valve cannot be tested without isolating Feedwater from the Steam Generators causing undesirable power transients and possible turbine and reactor trip.

Alternate Testing

This valve will be exercised (partial stroke) during the course of normal plant operations by automatically stroking to maintain programmed Steam Generator level. Abnormal valve operations will be detected by Steam Generator level abnormalities. This valve will also be exercised (full stroke) each cold shutdown, not to exceed once every three (3) months.

RR19

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This valve is normally closed above approximately 20% power and controls Feedwater flow to the Steam Generators below 20% power during start-up. This valve cannot be tested without isolating or perturbing Feedwater flow to the Steam Generators causing undesirable power transients and possible turbine and reactor trip.

Alternate Testing

This valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR20

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These 48 inch Containment Purge Valves are required by the Technical Specifications to be sealed closed during normal power operation.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR21

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These 18 inch Containment Purge Valves are allowed by the Technical Specifications to be opened only for essential operational and personnel protection reasons minimizing the total time open during normal power operation. Failure of these valves during operation in the open position would cause a loss of primary containment integrity and necessitate a plant shutdown.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR22

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

This valve supplies Instrument Air to containment to operate various valves. Isolation of Instrument Air (and if valve fails closed and cannot be reopened) would cause a plant shutdown.

Alternate Testing

This valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR23

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing of these normally closed valves during power operation would result in undesirable power transients and could cause a plant shutdown if valves fail to close. Closing the manual block valve upstream would require personnel entry into the Isolation Valve Cubicle area, which also contains the Main Steam Safety Valves in close proximity (approximately eight feet) to the manual block valve. Egress from this area requires personnel to pass by the Main Steam Safety Valves. Inadvertent operation of a Main Steam Safety Valve would result in significant steam release to the immediate area from the safety valve discharge drip lines causing possible personnel injury.

Alternate Testing

This valve will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR24

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these normally open valves at power is not practical and will cause a plant shutdown.

Alternate Testing

These valves will be required to be partial-stroke exercised quarterly and full-stroke exercised each cold shutdown not to exceed once every three (3) months.

C25

Test Requirement

IWV-3421 requires that Category A valves shall be leak tested except valves which function in the course of plant operation in a manner which demonstrates functionally adequate leak tightness need not be leak tested.

Testing Method

The leak tightness of these valves is demonstrated to be functionally adequate during normal plant operation. RCS is monitored for leakage per Technical Specification 3.4.6.2.

RR26

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These valves are line-pressure-actuated valves and therefore require their block valves to be open to allow reactor pressure to stroke the valve. This is not feasible at power to stroke these valves as an unwanted RCS pressure and pressurizer level transient would occur possibly tripping the reactor. Acceptable maximum RCS pressure has been determined to be between 300 and 400 psig, with initial pressurizer water level at 25%, to allow for full stroking of these valves without causing an uncontrollable transient.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three months.

RR27

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These valves cannot be stroked at a RCS pressure greater than or equal to 350 psig due to an RCS pressure interlock.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR28

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These valves cannot be exercised (full stroke) at power as the RHR Pumps have no provision for full flow testing except during cold shutdown conditions.

Alternate Testing

These valves will be required to be exercised (partial stroke) at least once every three (3) months using RHR Pump recirculation flow, and exercised (full stroke) each cold shutdown not to exceed once every three (3) months with the RHR Pumps aligned for normal shutdown cooling flows.

RR29

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These valves cannot be tested for operability (full stroke) at power because the RHR and LHSI pumps cannot overcome RCS pressure to allow flow through these check valves.

Alternate Testing

These valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR30

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

These valves are normally inaccessible during power operation. Exercising and stroke timing these valves will require lifting electrical leads to ensure repeatable stroke times since valve is normally controlled by a controller and not a handswitch.

Alternate Testing

These valves will be required to be exercised (full stroke) at each cold shutdown not to exceed once every three (3) months.

RR31

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These check valves can only be exercised (full stroke) by simulating LOCA conditions (pumping into the RCS with RCS at zero or very low pressure) in order to get full pump flows.

Alternate Testing

These check valves will be required to be exercised (partial stroke) at least once every three (3) months by running pumps at normal recirculation flows, and exercised (full stroke) each refueling outage by injecting into the RCS with the vessel head off using the appropriate pump(s) at full flow.

RR32

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These check valves cannot be exercised (full stroke or partial stroke) at power as the HHSI pumps cannot develop discharge pressure greater than normal RCS pressure. These check valves cannot be exercised (full stroke or partial stroke) during cold shutdown as the HHSI pumps would overpressurize the RCS.

Alternate Testing

These valves will be required to be exercised (full stroke) each refueling outage by injecting HHSI flow into the open and vented RCS.

RR33

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These check valves cannot be exercised (full or partial stroke) at power since the SIS Accumulator pressure is lower than the RCS pressure, cannot be exercised (full or partial stroke) during cold shutdown without the possibility of overpressurizing the RCS, and cannot be exercised (full stroke) during a refueling outage as the high flow rate of a full discharge with the SIS Accumulators at normal pressure may cause internal damage to the core.

Alternate Testing

These check valves will be verified operable by disassembly of one check valve each refueling outage on a rotating basis for inspection to ensure no degradation has occurred. If the check valve selected during any refueling outage shows signs of unacceptable degradation, all other applicable check valves will be disassembled and inspected during that refueling outage.

RR34

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves during normal power operation requires isolating normal letdown in order to prevent thermal shock and possible damage to the Letdown Heat Exchanger. Isolating normal letdown during power operation requires closing either LCV-0465 or LCV-0466 (both inaccessible during normal power operation). Failure of either LCV-0465 or LCV-0468 in the closed position could result in plant shutdown due to loss of normal pressurizer level control.

Alternate Testing

These valves will be required to be exercised (full stroke) at each cold shutdown not to exceed once every three (3) months.

RR35

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves during normal power operation would result in thermal shock and possible damage to the Regenerative Heat Exchanger and Letdown Heat Exchanger. This valve is inaccessible during normal plant operation and failure of this valve in the closed position could result in plant shutdown due to loss of normal pressurizer level control.

Alternate Testing

These valves will be required to be exercised (full stroke) at each cold shutdown not be exceed once every three (3) months.

RR36

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves during normal power operation requires closing of other valves, normally inaccessible, inside reactor containment to protect a portion of the letdown line from overpressurization and lifting of relief valve PSV-3100. Failure of these valves in the closed position or the other valves closed for the test could result in a plant shutdown due to loss of normal pressurizer level control. Also, isolation of letdown during normal power operation would result in thermal shock and possible damage to the Regenerative Heat Exchanger and the Letdown Heat Exchanger.

Alternate Testing

These valves will be required to be exercised (full stroke) at each cold shutdown not to exceed once every three (3) months.

RR37

Test Requirement

Exercise valves and check valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves during normal power operation requires alternating between the normal and alternate charging headers. Alternating charging headers at power would cause thermal shock and possible damage to the charging nozzles at the Reactor Coolant System boundary.

Alternate Testing

These valves and check valves will be required to be exercised (full stroke) each cold shutdown not to exceed once every three (3) months.

RR38

Test Requirement

Exercise valves for operability at least once every three (3) months.

Basis for Relief

The operability testing (full stroke) of these valves during normal power operation requires injecting Main Feedwater through the cooler Auxiliary Feedwater lines into the Steam Generator. Injecting the cooler water in the Auxiliary Feedwater lines followed by the hotter Main Feedwater would cause thermal shock and possible damage to the Auxiliary Feedwater nozzles at the Steam Generator boundary.

Alternate Testing

These valves will be required to be exercised (full stroke) at each cold shutdown not to exceed once every three (3) months.

RR39

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These check valves cannot be exercised at power (full or partial stroke) since neither the HHSI pumps, LHSI pumps, RHR pumps, nor the SIS Accumulators can overcome RCS pressure. These check valves cannot be exercised (full stroke) during cold shutdown without the possibility of overpressurizing the RCS. These check valves cannot be exercised (full stroke) during a refueling outage as the high flow rate required may cause internal damage to the core.

Alternate Testing

These check valves will be required to be exercised (partial stroke) each cold shutdown not to exceed once every three (3) months using RHR flow, and these check valves will be verified operable (full stroke capable) by disassembly of one check valve each refueling outage on a rotating basis for inspection to ensure no degradation has occurred. If the check valve selected during any refueling outage shows signs of unacceptable degradation, all other applicable check valves will be disassembled and inspected during that refueling outage.

RR40

Test Requirement

The stroke time of all power-operated valves shall be measured.

Basis for Relief

These valves supply air to the Standby Diesel Generator during the starting sequence establishing initial starting compression. Downstream of each redundant valve is a pressure switch that controls the alarm logic. The failure of either valve to open sufficiently within one second of a start signal will result in a Starting Air System Malfunction alarm. Normal testing of the Diesel Generator in accordance with Technical Specification will exercise both of these valves and verify stroke time less than one second by absence of alarms. This testing is performed at least once every 31 days on a staggered test basis.

Alternate Testing

These valves will be required to be verified operable during normal Diesel Generator testing by verifying absence of the Starting Air System Malfunction alarm. No stroke times will be taken.

C41

Test Requirement

Exercise check valves for operability at least once every three (3) months, and category A valves shall be leak tested except valves which function in the course of plant operation in a manner which demonstrates functionally adequate leak tightness need not be leak tested.

Testing Method

These valves are normally closed unless the Residual Heat Removal System experiences an external leak or a net intersystem leakage causing makeup from the RCP Seal Standpipe which would be detectable by a low level alarm on the RCP Seal Standpipe servicing the affected train, and are therefore passive or proven passive by lack of a low level alarm. Leakage, however, is important to the valve's function to prevent diversion of Low Head Safety Injection or Residual Heat Removal System flow. Leakage during normal operation (if intersystem leakage into the Residual Heat Removal System is positive) and during Residual Heat Removal Pump operation (during heatup, cooldown, and pump testing) will be detected by a high level alarm in the corresponding RCP Seal Standpipe. No additional testing will be performed other than normal operations monitoring of the RCP Seal Standpipe alarms.

RR42

Test Requirement

IWV-3300 states that valves with remote position indication shall be observed at least once every 2 years to verify that valve operation is accurately indicated.

Basis for Relief

These valves, AP-FV-2455 and AP-FV-2455A, are solenoid valves for which stem movement cannot be directly observed. These are redundant valves in series and operate simultaneously from a single switch with one set of indicating lights.

Alternate Testing

The valves are stroked and timed during normal inservice testing using the remote indicating lights. Open and closed indication is actuated by the limit switches of each valve wired in series. Therefore remote position indication is based on the slowest valve. Since these redundant valves cannot be exercised separately (unless leads are lifted, temporary 125 VDC power is supplied to the disabled valve to maintain it in the open position and jumpers are placed across the disabled valve's limit switches) the valves will be stroked simultaneously and remote position indication verified by observing system flow is initiated and then secured.

RR43

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

These check valves can only be exercised (full stroke) by simulating LOCA conditions (pumping into the RCS with RCS at zero or very low pressure) in order to get full pump flows.

Alternate Testing

These check valves will be required to be exercised (partial stroke) at least once every three (3) months, provided RCS pressure is above pump shutoff head, by running pumps at normal recirculation flows, and exercised (full stroke) each refueling outage by injecting into the RCS with the vessel head off using the appropriate pump(s) at full flow.

4.0 DRAWINGS

5S109 F00016 #2 (F00016)

5S199 F00020 #2 (F00020)

5S149 F00024 #2 (F00024)

5S139 F00063 #2 (F00063)

5R119 F05001 #2 (F05001)

5R149 F05003 #2 (F05003)

5R149 F05004 #2 (F05004)

5R179 F05005 #2 (F05005)

5R179 F05006 #2 (F05006)

5R179 F05007 #2 (F05007)

5R179 F05009 #2 (F05009)

5N129 F05013 #2 (F05013)

5N129 F05014 #2 (F05014)

5N129 F05015 #2 (F05015)

5N129 F05016 #2 (F05016)

5R209 F05017 #2 (F05017)

5R209 F05018 #2 (F05018)

5R209 F05019 #2 (F05019)

5R209 F05020 #2 (F05020)

5R309 F05022 #2 (F05022)

5R219 F05028 #2 (F05028)

5Q069 F05030 #2 (F05030)

5R279 F05033 #2 (F05033)

5S199 F05034 #2 (F05034)

4.0 DRAWINGS (CONT.)

5N109 F05037 #2 (F05037)

5R289 F05038 #2 (F05038)

5R289 F05039 #2 (F05039)

5Q119 F05040 #2 (F05040)

5Q109 F05041 #2 (F05041)

5R279 F05042 #2 (F05042)

5Q129 F05044 #2 (F05044)

5R349 F05046 #2 (F05046)

5Q279 F05047 #2 (F05047)

5S209 F05057 #2 (F05057)

5C269 F05060 #2 (F05060)

5R169 F20000 #2 (F20000)

5S209 F20001 #2 (F20001)

5V149 V00017 #2 (V00017)

5V149 V00018 #2 (V00018)

5V149 V00019 #2 (V00019)

5V149 V00021 #2 (V00021)

5V119 V10001 #2 (V10001)

3V119 V10002 #2 (V10002)

5Z329 Z00045 #2 (Z00045)

5Z169 Z00046 #2 (Z00046)

5Z549 Z47501 #2 (Z47501)

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