SUSQUEHANNA STEAM ELECTRIC STATION

UNIT 2

INSERVICE INSPECTION PROGRAM PLAN

FOR

PUMP AND VALVE OPERATIONAL TESTING

Rev.	Description	Prepared by:	Approved by:	Date
4	Compliance with NRC Generic Letter 89-04	Signatures on File		
5	Responses to NRC Comments	Signatures on File		
6	Addition of Water Level Backfill Valves	Signatures on File		
7	10 Year ASME Code Update	D. K. Ritter	[signature]	5/17/94

SUSQUEHANNA STEAM ELECTRIC STATION
UNIT 2
PUMP AND VALVE INSERVICE INSPECTION
TESTING PROGRAM

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SUSQUEHANNA STEAM ELECTRIC STATION UNIT 2

PUMP AND VALVE INSERVICE INSPECTION TESTING PROGRAM

PROGRAM SUMMARY

The pump and valve ISI testing program at the Susquehanna SES Unit 1 will be conducted in accordance with the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code. ASME/ANSI OM Standard Part 6 and Part 10 of OMa-1988 are incorporated by reference. These are the latest ASME Code editions/addenda endorsed by 10CFR50.55(a)(f), "Inservice Testing Requirements". Specific exceptions from these requirements are included here as Relief Requests, as allowed per 10CFR50.55a(f)(5)(iii). The second 10 year interval of the program commences on June 01, 1994, as established by PP&L Letter PLA-3746, dated 4/09/92.

Pumps within the scope of this program are listed in the Pump Table, with pertinent data. Valves within the scope of this program are listed in the Valve Tables, organized by P&ID number, along with their pertinent data. A legend is provided for the explanation of column headings, assigned codes, and other terminology employed in each table.

For valves so equipped, remote position indicators will be utilized to demonstrate valve operability. Proper functioning of these position indicators will be demonstrated at least once every 24 months. Safety valve and relief valve pressure setpoint testing will be conducted in compliance with ASME/ANSI OM Standard Part 1 of OM-1987.

With the exception of valves providing a high pressure to low pressure boundary (pressure isolation function), valve leakage rate testing and acceptance criteria for containment isolation valves will be based on 10CFR50 Appendix J requirements as discussed in FSAR Subsection 6.2.6 and Susquehanna SES Technical Specification 3/4.6.1.2.

Excess flow check valves are installed on instrument lines penetrating containment in accordance with Regulatory Guide 1.11. As such, the lines are sized and/or orificed such that off-site doses will be substantially below 10CFR100 limits in the event of a rupture. Therefore, individual leak rate testing of these valves is not required for conformance with 10CFR50, Appendix J requirements. Functional testing of valves to verify closure can be accomplished by the process of venting the instrument side of the valve while the process side is under pressure. Such testing is required by Technical Specification 4.6.3.4 at least once per 18 months. Testing on a more frequent basis is not feasible for several reasons. Instruments serviced by these valves frequently have interlock or actuation functions that would be interfered with should testing be performed during plant operation. Also, process liquid will be contaminated to some degree, requiring special measures to collect flow from the vented instrument side. Functional testing with verification that flow is checked will be performed at least once per 18 months per Technical

Specification Surveillance Requirement 4.6.3.4. A listing of excess flow check valves can be found in Technical Specification Table 3.6.3-1. Refueling Outage Test Justification 20 pertains to excess flow check valve testing.

Check valves whose safety function is to open will be full-stroke tested. Since disc position usually is not observable, verification of the safety analysis design flowrate through the valve is considered an adequate demonstration of the full-stroke requirement. This convention is in agreement with NRC Generic Letter 89-04, Position 1.

Limit stroke times for power operated valves are provided and controlled in a general plant procedure in accordance with the NRC guidance provided by "Minutes of the Public Meetings on Generic Letter 89-04" (NRC Response to Question 38). Limit stroke times for power operated valves are calculated from the stroke time reference values in Engineering Specification M-1437 for Unit 2 valves.

Where devices monitoring appropriate parameters exist, permanently installed instrumentation will be used during pump performance testing. Both permanent plant instrumentation and measuring and test equipment will be maintained by the Instrumentation and Controls Section in accordance with their administrative procedures.

For those requirements of the Code which are impractical to test, Relief Requests have been included in the program, as allowed per 10CFR50.55a(f)(5)(iii). These Relief Requests provide the impractical test requirement, basis for relief and the proposed alternative testing. To explain the testing of valves impractical to test at quarterly frequency, Cold Shutdown Test Justifications and Refueling Outage Test Justifications have been included in the program, per OMa-1988 Part 10, paragraphs 4.2.1.2 and 4.3.2.2.

IST PROGRAM DEVELOPMENT PROCESS

Inclusion of the following details of the Susquehanna SES IST Program development process is intended to satisfy the NRC request contained in a letter dated 6/23/92.

1) Details of documents used for IST Program development:

- 10CFR50.55(a)(f)
- NRC NUREG-0800
- NRC Draft NUREG-1482
- NRC Generic Letter 89-04
- ASME Code Section XI, Subsections IWA, IWP, and IWV
- ASME OM Standard OM-1987 Part 1
- ASME OM Standard OMa-1988 Parts 6 and 10
- Susquehanna SES Technical Specifications
- Susquehanna SES FSAR
- Susquehanna SES P&ID Drawings (for various plant systems)
- ISI-T-202, Basis Document for ISI Classification Boundaries
- NDAP-QA-0412, Local Leakage Rate Test Program
- NDAP-QA-0423, Station Pump and Valve Testing Program
- NDAP-QA-0722, Surveillance Testing Program
- NDAP-QA-1608, Inservice Inspection (ISI) Program

2) Method of determining if a component requires inservice testing:

Those plant systems derived from NUREG 0800 and identified in PP&L Document ISI-T-202, Basis Document for ISI Classification Boundaries, as fluid systems important to safety for BWR plants are designated as candidate systems for component testing by the IST Program.

The plant P&ID drawing(s) establishing the configuration of each designated plant system are researched to identify the pumps and valves in each system that could be required to perform specific function(s) in mitigating accident consequences or shutting down the reactor to achieve and maintain the cold shutdown condition. The FSAR descriptions of those pumps and valves and of the plant design basis accidents are reviewed to establish any role that a given pump or valve may have to play in a reactor shutdown or accident.

The pumps and valves of each system selected for inclusion in the IST Program are reviewed by the cognizant system engineer for completeness. Compilation of the selected pumps and valves into the listings of the IST Program Plan document then proceeds.

3) Basis for the testing required for each IST Program pump and valve:

ASME OM Standard OMa-1988, Part 6, section 4 (Testing Requirements, for pumps) and section 5 (Testing Methods, for pumps); and Part 10, section 3 (Testing Requirements, for valves) and section 4 (Testing Methods, for valves) are reviewed to determine the requirements for periodic testing of each different type of pump and of each different type of valve:

- Per OMa-1988 Part 6, section 5 pumps require inservice testing, consisting of measurement of four inservice test quantities at test conditions at quarterly frequency.

- Per OMa-1988 Part 10, section 4 power operated valves require exercise testing and measurement of stroke time at quarterly frequency; or if not practical, then at unit cold shutdown frequency; or if not practical, then at unit refueling outage frequency.

- Per OMa-1988, Part 10, paragraph 4.2.2 any valve, for which seat leakage is limited to a specific maximum amount in the closed position in fulfillment of this function, requires leakage tests at a 2 year frequency.

- Per OMa-1988 Part 10, paragraph 4.3.1 safety valves and relief valves require testing of pressure set points on an alternating basis, so that each ASME Class 1 valve is tested once each 5 year period and each ASME Class 2 or 3 valve is tested once each 10 year period.

- Per OMa-1988 Part 10, paragraph 4.3.2 check valves require exercise testing at quarterly frequency; or if not practical, then at unit cold shutdown frequency; or if not practical, then at refueling outage frequency.

- Per OMa-1988 Part 10, paragraph 4.3.2.4(c) check valves for which exercise testing is not desired, alternatively may be disassembled and inspected to verify operability at every refueling outage.

- Per OMa-1988 Part 10, paragraph 4.4 explosively actuated valves require actuation testing by firing and replacement of at least 20% of their explosive charges at least once every 2 years. In no case shall the service life of any explosive charge exceed 10 years.

The practicality of performing these required tests for each pump and each valve is evaluated and, if system configuration or other concerns preclude performing a test as specified, then a Relief Request is submitted to address the subject.

4) Basis for categorizing valves:

ASME OM Standard OMa-1988, Part 10, paragraph 1.4 (Categories of Valves) is reviewed to determine category(s) for each valve, according to its type and specific function:

- Per OMa-1988, Part 10, paragraph 1.4(a) any valve, for which seat leakage in the closed position is limited to a specific maximum amount for fulfillment of its specific function (by plant Technical Specification or FSAR), is identified as a Category A valve.

- Per OMa-1988, Part 10, paragraph 1.4(b) any valve, for which seat leakage in the closed position is inconsequential to fulfillment of its specific function (not limited by plant Technical Specification or FSAR), is identified as a Category B valve. (Category B is interpreted as being equivalent to, rather than additional to Category C, in the context of their separate treatments by paragraphs 4.2 and 4.3).

- Per OMa-1988, Part 10, paragraph 1.4(c) any valve that is self-actuating in response to some system characteristic, such as pressure (for a relief valve) or flow direction (for a check valve), is identified as a Category C valve.

- Per OMa-1988, Part 10, paragraph 1.4(d) any valve that is actuated by an energy source capable of only one operation, such as a rupture disk or an explosive-actuated valve is identified as a Category D valve.

5) Method used for maintaining the IST Program current with design modification:

The responsible engineer for the design of each plant modification is required by the Design Checklist to consider (and communicate with the IST Engineer) as to whether a given modification adds, changes, or removes any pump or valve already in or required to be added to the IST Program.

After the modification design process identifies a pump or valve modification that will change the IST Program status of a component, the IST Engineer is responsible to ensure that the IST Program is updated to correctly reflect the new status of the modified pump or valve and that the appropriate surveillance test procedures or equivalent work documents are revised to properly implement the testing changes for the modified pump or valve.

LEGEND FOR PUMP TABLE

Parameter	Abbreviation	Description
System:		Commonly recognized system name, in which pump is located
P&ID Number:	M-21__	Drawing number of P&ID drawings depicting the pump
P&ID Coordinates:		Location of pump on P&ID drawing
ASME Class:	1,2,3 S	ASME Code Classes 1, 2, and 3 Non-code pump which performs a safety-related function
Pump Size:		Nominal diameter of pump discharge line, in inches
Pump Type:	CF PD	Centrifugal Positive displacement
Pump Orientation:	H V	Horizontal (axis of impeller) Vertical (axis of impeller)
Driver Type:	EM ST	Electric motor Steam turbine
Test Parameters:		The following 5 variable physical quantities, designated for measurement during each test:
Rotational Speed:		Rotational speed of variable speed pumps, measured in revolutions per minute
Flow Rate:		Volume flow rate, measured in gallons per minute
Differential Pressure:		The remainder of discharge pressure minus suction pressure for centrifugal pumps, stated in pounds per square inch (differential)
Discharge Pressure:		Discharge pressure of positive displacement pumps, measured in pounds per square inch (gage)
Vibration:		Vibration displacement amplitude, measured in mils; or vibration velocity amplitude, measured in inches per second
Test Frequency:	M Q	Test performed once every 31 days Test performed once every 92 days
Relief Request(s):	RR__	Number(s) of applicable relief request(s)
Remarks:		Notes on methods of testing

LEGEND FOR VALVE TABLES

Parameter	Abbreviation	Description
Valve Number:		Unique system designated valve identification, possibly having one of the following prefixes:
	HV	Handswitch-operated valve
	SV	Solenoid-operated valve
	PSV	Pressure safety/relief valve
	XV	Excess flow check valve
	FV	Flow control valve
	TV	Temperature control valve
	PSE	Rupture disks
P&ID Coordinates:		Location of valve on P&ID drawing
ASME Class:	1,2,3	ASME Code Classes 1, 2 and 3
	S	Non-code valve which performs a safety-related function
Section XI Valve Category:	A	Valves with specified maximum leakage rate
	B	Valves with no specified maximum leakage rate
	C	Self-actuating (check, relief valves)
	D	Actuated by energy source capable of only one operation (rupture disks, explosive valves)
Active/Passive:	A	Valves required to change position to accomplish specified safety function
	P	Valves not required to change position to accomplish specified safety function
Valve Size:		Nominal valve size in inches
Valve Type:	GT	Gate valve
	GB	Globe valve
	CK	Check valve
	RV	Relief valve
	SC	Stop valve
	BF	Butterfly valve
	DI	Diaphragm valve
	EX	Explosive valve
	BA	Ball valve
	RD	Rupture disk
	XC	Excess Flow Check valve

LEGEND FOR VALVE TABLES (Cont'd.)

Parameter	Abbreviation	Description
Actuator Type:	MO	Motor operated
	SO	Solenoid operated
	AO	Air operated
	HO	Hydraulic operated
	SA	Self actuated
	MA	Manual
	PA	Pilot actuated
Remote Position Indicator (RPI):	X	Valve is equipped with an RPI
	-	Valve is not equipped with an RPI
Safety Position(s):	O	Open
	C	Closed
	O/C	Both Open and Closed
	T	Throttled
Tests Required:	FS	Full stroke exercise valve to safety position(s)
	PS	Part stroke exercise valve
	LT	Leak-rate test valve to Section XI requirements
	LJ	Leak-rate test valve to Appendix J requirements
	ST	Measure the full-stroke times of the valve
	FT	Observe the fail-safe operation of the valve
	PI	Verify the valve remote position indication
	RV	Safety and relief valve test
	EX	Explosive valve test
Tests Performed:	FS	Full stroke exercise valve to safety position(s)
	PS	Part stroke exercise valve
	LT	Leak-rate test valve to Section XI requirements
	LJ	Leak-rate test valve to Appendix J requirements
	ST	Measure the full-stroke times of the valve
	FT	Observe the fail-safe operation of the valve
	PI	Verify the valve remote position indication
	RV	Safety and relief valve test
	EX	Explosive valve test

LEGEND FOR VALVE TABLES (Cont'd.)

Parameter	Abbreviation	Description
Test Frequency:	C	Continuous
	M	Test performed once every 31 days
	Q	Test performed once every 92 days
	CS	Test performed during cold shutdowns but not more frequency than once every 92 days
	RF	Test performed each reactor refueling outage
	2Y	Test performed once every two years
	RV	Test relief valve at IWV or OM-1 schedule
	SD	Disassemble, inspect, and manually exercise one valve from specified group each reactor refueling outage
	O	Other
Cold Shutdown/Refueling Outage Justification:	CJ__ RJ__	Number(s) of applicable Cold Shutdown Test Justification(s) or Refueling Outage Test Justification(s)
Relief Request(s):	RR__	Number(s) of applicable Relief Request(s)
Remarks:		Notes on any special methods of testing. If identified as a pressure isolation valve, additional leak rate testing will be performed (water as test medium) at 1035 $\pm$ 10 psig per plant Technical Specification 4.4.3.2, with an acceptance criterion of 1 gpm, per plant Technical Specification 3.4.3.2. Valve testing configurations will be similar to that utilized for containment local leak rate testing.

PUMP TABLE

PARAMETER MEASURED

Pump Number	System	P&ID Number	P&ID Coordinates	ASME Class	Pump Size (inches)	Pump Type	Pump Orientation	Driver Type	Test Parameters					Test Frequency	Relief Request(s)	Remarks
									Rotational Speed	Flow Rate	Differential Pressure	Discharge Pressure	Vibration			
2P202A	Residual Heat Removal-A	M-2151 SH. 1	H-3	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P202B	Residual Heat Removal-B	M-2151 SH. 3	G-6	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P202C	Residual Heat Removal-C	M-2151 SH. 1	G-4	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P202D	Residual Heat Removal-D	M-2151 SH. 3	H-7	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P203	Reactor Core Isolation Cooling	M-2150	D-5	2	6	CF	H	ST	X	X	X	--	X	Q		Bypass loop.
2P204 and 2P209	High Pressure Coolant Injection Main & Booster	M-2156 SH. 1	C-5	2	10	CF	H	ST	X	X	X	--	X	Q	RR11	Bypass loop, main and booster pumps operate in tandem - measurements taken as one pump.

PARAMETER MEASURED (Continued)

Pump Number	System	P&ID Number	P&ID Coordinates	ASME Class	Pump Size (inches)	Pump Type	Pump Orientation	Driver Type	Test Parameters					Test Frequency	Relief Request(s)	Remarks
									Rotational Speed	Flow Rate	Differential Pressure	Discharge Pressure	Vibration			
2P206A	Core Spray-A	M-2152	G-5	2	12	CF	V	EM	–	X	X	–	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P206B	Core Spray-B	M-2152	G-7	2	12	CF	V	EM	–	X	X	–	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P206C	Core Spray-C	M-2152	G-6	2	12	CF	V	EM	–	X	X	–	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P206D	Core Spray-D	M-2152	G-8	2	12	CF	V	EM	–	X	X	–	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
2P208A	Standby Liquid Control-A	M-2148	D-5	2	1½	PD	H	EM	–	X	–	X	X	Q		Bypass loop.
2P208B	Standby Liquid Control-B	M-2148	F-5	2	1½	PD	H	EM	–	X	–	X	X	Q		Bypass loop.
2P213	HPCI Auxiliary Oil Pump	M-2156 SH. 2	H-3	S	1¼	PD	H	EM	–	–	–	X	X	Q	RR12	

PARAMETER MEASURED (Continued)

Pump Number	System	P&ID Number	P&ID Coordinates	ASME Class	Pump Size (inches)	Pump Type	Pump Orientation	Driver Type	Test Parameters					Test Frequency	Relief Request(s)	Remarks
									Rotational Speed	Flow Rate	Differential Pressure	Discharge Pressure	Vibration			
2P506A	RHR Service Water-A	M-2112	C-1	3	20	CF	V	EM	--	X	X	--	X	Q	--	Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.
2P506B	RHR Service Water-B	M-2112	G-1	3	20	CF	V	EM	--	X	X	--	X	Q	--	Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.

VALVE TABLES

SERVICE WATER M-2109 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-20943A2	C-8	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	
HV-20943B2	E-8	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	

SERVICE WATER M-2110

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-21024A1	B-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	
HV-21024A2	A-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	
HV-21024B1	C-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	
HV-21024B2	C-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	

EMERGENCY SERVICE WATER M-2111 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
211132	F-4	3	C	A	4	CK	SA	--	O	FS FS	PS SD	Q RF	-- --	-- RR19	Open test only.
211133	G-4	3	C	A	4	CK	SA	--	O	FS FS	PS SD	Q RF	-- --	-- RR19	Open test only.
211134	E-7	3	C	A	4	CK	SA	--	O	FS FS	PS SD	Q RF	-- --	-- RR19	Open test only.
211135	E-7	3	C	A	4	CK	SA	--	O	FS FS	PS SD	Q RF	-- --	-- RR19	Open test only.
211165A	F-4	3	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
211165B	D-6	3	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
HV-21143A	B-2	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	
HV-21143B	A-6	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	

EMERGENCY SERVICE WATER M-2111 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-21144A	G-4	3	B	A	4	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-21144B	F-4	3	C	A	4	BF	MO	--	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
PSV-21101	G-3	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-21102	E-6	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	

RHR SERVICE WATER M-2112

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
212001	C-2	3	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
212003	G-2	3	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
HV-21210A	C-5	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-21210B	G-5	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-21215A	C-7	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-21215B	G-7	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-212F073A	A-5	3	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

RHR SERVICE WATER M-2112 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-212F073B	E-5	3	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-212F074A	A-5	S	B	A	1	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- --	Rapid Acting Valve.
HV-212F074B	E-5	S	B	A	1	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- --	Rapid Acting Valve.
HV-212F075A	A-5	2	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-212F075B	E-5	2	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
PSV-21212A	B-7	3	C	A	4	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-21212B	F-7	3	C	A	4	RV	SA	--	O/C	RV	RV	RV	--	--	

RHR SERVICE WATER M-2112 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-21213A	B-7	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-21213B	F-7	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	

REACTOR BUILDING CLOSED COOLING WATER M-2113

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-21313	C-1	2	A	A	4	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ01 CJ01 – –	– – – –	
HV-21314	C-3	2	A	A	4	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ01 CJ01 – –	– – – –	
HV-21345	C-1	2	A	A	4	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ01 CJ01 – –	– – – –	
HV-21346	C-3	2	A	A	4	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ01 CJ01 – –	– – – –	

CONTAINMENT INSTRUMENT GAS M-2126 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
226018	A-6	2	C	A	1	CK	SA	–	C	FS	FS	RF	RJ01	–	Closure test only.
226029	C-5	2	C	A	1	CK	SA	–	C	FS	FS	RF	RJ01	–	Closure test only.
226072	G-7	2	A,C	A	1	CK	SA	–	C	FS LJ	FS LJ	RF RF	RJ02 –	– –	Closure test only, verify operation during leak test.
226074	E-8	2	A,C	A	3	CK	SA	–	C	FS LJ	FS LJ	RF RF	RJ02 –	– –	Closure test only, verify operation during leak test.
226152	C-8	2	A,C	A	1	CK	SA	–	O/C	FS LJ	FS LJ	RF RF	RJ02 –	– –	Verify operation during leak test.
226154	A-8	2	A,C	A	1	CK	SA	–	O/C	FS LJ	FS LJ	RF RF	RJ02 –	– –	Verify operation during leak test.
226164	H-7	2	A,C	A	1	CK	SA	–	C	FS LJ	FS LJ	RF RF	RJ02 –	– –	Closure test only, verify operation during leak test.
PCV-22643	B-6	3	C	A	1	GB	SA	–	T	–	–	–	–	–	No testing required.
PSV-22643	B-6	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-22644	B-5	3	C	A	¼	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-22646	C-4	3	C	A	¼	RV	SA	--	O/C	RV	RV	RV	--	--	
PCV-22648	D-5	3	C	A	1	GB	SA	--	T	--	--	--	--	--	No testing required.
PSV-22648	C-5	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-22660	F-5	S	C	A	⅜	RV	SA	--	O/C	RV	RV	RV	--	--	
SV-22643	B-6	3	B	A	1	GB	SO	X	O	FS ST PI	FS ST PI	Q Q RF	-- -- RJ19	-- -- --	Rapid acting valve.
SV-22644	A-6	2	B	A	1	GB	SO	X	C	FS ST PI	FS ST PI	Q Q RF	-- -- RJ19	-- -- --	Rapid acting valve.

CONTAINMENT INSTRUMENT GAS M-2126 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-22648	C-4	3	B	A	1	GB	SO	X	O	FS ST PI	FS ST PI	Q Q RF	-- -- RJ19	-- -- --	Rapid acting valve.
SV-22649	C-6	2	B	A	1	GB	SO	X	C	FS ST PI	FS ST PI	Q Q RF	-- -- RJ19	-- -- --	Rapid acting valve.
SV-22651	E-7	2	A	A	3	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS RF 2Y	CJ02 CJ02 RJ19 --	-- -- -- --	Rapid acting valve.
SV-22654A	A-8	2	A	A	1	GB	SO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS RF 2Y	CJ03 CJ03 RJ19 --	-- -- -- --	Rapid acting valve.

CONTAINMENT INSTRUMENT GAS M-2126 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-22654B	C-7	2	A	A	1	GB	SO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS RF 2Y	CJ03 CJ03 RJ19 –	– – – –	Rapid acting valve.
SV-22661	F-7	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-22671	G-7	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.

CONTAINMENT INSTRUMENT GAS M-2126 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-22603[5]	D-9	2	A	A	2	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
SV-22605	D-9	2	A	A	2	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.

MSIV LEAKAGE CONTROL SYSTEM M-2139

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
239F010	E-6	2	C	A	1	CK	SA	–	O/C	FS	–	O	–	RR04	Periodic inspection.
239F011	F-7	2	C	A	1	CK	SA	–	O/C	FS	–	O	–	RR04	Periodic inspection.
HV-239F001B	D-3	1	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ04 CJ04 – –	– – – –	
HV-239F001F	G-3	1	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ04 CJ04 – –	– – – –	
HV-239F001K	G-3	1	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ04 CJ04 – –	– – – –	

MSIV LEAKAGE CONTROL SYSTEM M-2139 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-239F001P	H-3	1	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ04 CJ04 – –	– – – –	
HV-239F002B	E-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-239F002F	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-239F002K	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-239F002P	H-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	

MSIV LEAKAGE CONTROL SYSTEM M-2139 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-239F003B	E-5	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-239F003F	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-239F003K	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-239F003P	H-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-239F006	D-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 –	– – –	

MSIV LEAKAGE CONTROL SYSTEM M-2139 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-239F007	E-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 –	– – –	
HV-239F008	D-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 –	– – –	
HV-239F009	D-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 –	– – –	
XV-23910B	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-23910F	F-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-23910K	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

MSIV LEAKAGE CONTROL SYSTEM M-2139 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-23910P	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-2141 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
241F024A	A-5	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F024B	A-5	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F024C	A-5	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F024D	A-5	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F029A	A-7	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F029B	A-7	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F029C	A-7	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F029D	A-7	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJ05	--	Closure test only.
241F036A	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036B	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036C	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036D	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
241F036E	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036F	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036G	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036H	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036J	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036K	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036L	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036M	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036N	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036P	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F036R	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
241F036S	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
241F040G	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
241F040J	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
241F040K	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
241F040L	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
241F040M	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
241F040N	D-4	3	C	A	1	CK	SA	--	O/C	FS	FS	RF	RJ06	--	
HV-241F016	E-6	1	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-241F019	E-6	1	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-241F020	E-7	2	B	A	3	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-241F022A	C-5	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	
HV-241F022B	F-5	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-241F022C	G-5	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	
HV-241F022D	H-5	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	
HV-241F028A	C-6	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	
HV-241F028B	F-6	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 – –	– – – –	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-241F028C	G-6	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 -- --	-- -- -- --	
HV-241F028D	H-6	1	A	A	26	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ06 CJ06 -- --	-- -- -- --	
PSV-24137A	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137B	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137C	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137D	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137E	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137F	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-24137G	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137H	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137J	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137K	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137L	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137M	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137N	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137P	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137R	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-24137S	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F013A	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-241F013B	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013C	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013D	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013E	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013F	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013G	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-241F013H	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-241F013J	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- -- --	ADS Valve.
PSV-241F013K	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-241F013L	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-241F013M	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-241F013N	C-4	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-241F013P	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013R	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F013S	C-4	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-241F037A	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037B	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037C	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037D	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037E	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037F	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037G	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-241F037H	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037J	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037K	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037L	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037M	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037N	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037P	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037R	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-241F037S	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
XV-241F070A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-241F070B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F070C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F070D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F071A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F071B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F071C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-241F071D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-241F072A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F072B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F072C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F072D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F073A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F073B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-241F073C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER M-2141 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-241F073D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER M-2141 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
241017	F-3	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
241018	F-3	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
241F010A	C-4	1	A,C	A	24	CK	SA	--	O/C	FS LJ	FS LJ	RF 2Y	RJ04 --	-- --	
241F010B	E-4	1	A,C	A	24	CK	SA	--	O/C	FS LJ	FS LJ	RF 2Y	RJ04 --	-- --	
HV-24107A	C-3	1	C	A	24	CK	SA	--	O	FS	FS	C	--	--	Open test only.
HV-24107B	E-3	1	C	A	24	CK	SA	--	O	FS	FS	C	--	--	Open test only.
HV-24182A	C-2	2	A	A	3	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-24182B	E-2	2	A	A	3	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	

NUCLEAR BOILER M-2141 Sheet 2 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-241F032A	C-2	2	A,C	A	24	SC	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y RF	RJ07 RJ07 – RJ07	– – – –	Closure test only.
HV-241F032B	E-2	2	A,C	A	24	SC	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y RF	RJ07 RJ07 – RJ07	– – – –	Closure test only.
XV-241F009	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-24201	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-24202	B-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F041	B-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F043A	B-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F043B	B-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F045A	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F045B	D-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F047A	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-242F047B	C-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F051A	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F051B	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F051C	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F051D	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F053A	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F053B	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-252F053C	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F053D	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F055	G-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F057	G-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059A	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059B	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059C	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-242F059D	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059E	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059F	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059G	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059H	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059L	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-242F059M	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-242F059N	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059P	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059R	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059S	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059T	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F059U	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-242F061	H-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-2142 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
242032	D-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242033	D-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242044	E-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242045	E-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242059	F-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242060	F-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242071	G-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
242072	G-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.

REACTOR RECIRCULATION M-2143 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-243F019	B-4	1	A	A	¾	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
HV-243F020	B-4	1	A	A	1	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
HV-243F031A	F-8	1	B	A	28	GT	MO	X	C	FS ST PI	FS ST PI	CS CS 2Y	CJ07 CJ07 --	-- -- --	
HV-243F031B	F-8	1	B	A	28	GT	MO	X	C	FS ST PI	FS ST PI	CS CS 2Y	CJ07 CJ07 --	-- -- --	
HV-243F032A	F-8	1	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

REACTOR RECIRCULATION M-2143 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-243F032B	F-8	1	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
XV-243F009A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F009B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F009C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F009D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F010A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F010B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR RECIRCULATION M-2143 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-243F010C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F010D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F011A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F011B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F011C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F011D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F012A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR RECIRCULATION M-2143 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-243F012B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F012C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F012D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F040A	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F040B	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F040C	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F040D	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

REACTOR RECIRCULATION M-2143 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-243F057A	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-243F057B	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR RECIRCULATION M-2143 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
243F013A	E-5	2	A,C	A	1	CK	SA	–	C	FS LJ	FS LJ	RF RF	RJ09 RJ09	– –	Closure test only.
243F013B	E-5	2	A,C	A	1	CK	SA	–	C	FS LJ	FS LJ	RF RF	RJ09 RJ09	– –	Closure test only.
XV-243F003A	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F003B	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F004A	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F004B	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-243F017A	F-3	2	A,C	A	1	XC	SA	X	C	FS PI LJ	FS PI LJ	RF 2Y RF	RJ10 – RJ10	– – –	Closure test only.

REACTOR RECIRCULATION M-2143 Sheet 2 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-243F017B	H-2	2	A,C	A	1	XC	SA	X	C	FS PI LJ	FS PI LJ	RF 2Y RF	RJ10 -- RJ10	-- -- --	Closure test only.

REACTOR WATER CLEANUP M-2144 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-244F001	B-2	1	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-244F004	B-2	1	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
XV-24411A	A-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-24411B	B-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-24411C	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-24411D	E-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

REACTOR WATER CLEANUP M-2144 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-244F046	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

CONTROL ROD DRIVE M-2147 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-247F010A	A-4	2	B	A	1	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- RR07	
XV-247F010B	A-5	2	B	A	1	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- RR07	
XV-247F011A	F-5	2	B	A	2	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- RR07	
XV-247F011B	F-6	2	B	A	2	GB	AO	--	C	FS ST	FS ST	Q Q	-- --	-- RR07	

CONTROL ROD DRIVE M-2147 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
247114*	A-8	2	C	A	¾	CK	SA	--	O	FS	FS	RF	--	RR06	Open test only.
247115*	D-8	2	C	A	½	CK	SA	--	C	FS	FS	RF	--	RR06	Closure test only.
247138*	D-4	2	C	A	½	CK	SA	--	C	FS	FS	RF	--	RR06	Closure test only.
PSE-247132*	E-7	2	D	A	¼	RD	SA	--	O	--	--	--	--	--	No testing required.
XV-247126*	D-6	2	B	A	½	GB	AO	--	O	FS ST	FS --	RF --	-- --	RR06 RR06	Open test only.
XV-247127*	A-6	2	B	A	½	GB	AO	--	O	FS ST	FS --	RF --	-- --	RR06 RR06	Open test only.

* There are a total of 185 sets of these valves, one for each of the 185 CRD Hydraulic Control Units.

STANDBY LIQUID CONTROL M-2148

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
248F004A	D-7	2	D	A	1 ½	EX	EX	–	O	EX	EX	2Y	–	–	Explosive valve.
248F004B	D-7	2	D	A	1 ½	EX	EX	–	O	EX	EX	2Y	–	–	Explosive valve.
248F007	F-8	1	A,C	A	1 ½	CK	SA	–	O/C	FS LJ	FS LJ	RF RF	RJ12 RJ12	– –	Closure test during leak test, open test during reactor vessel injection test.
248F033A	D-6	2	C	A	1 ½	CK	SA	–	O/C	FS	FS	Q	–	–	
248F033B	F-6	2	C	A	1 ½	CK	SA	–	O/C	FS	FS	Q	–	–	
HV-248F006	D-8	1	A,C	A	1 ½	SC	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	RF RF 2Y 2Y	RJ11 RJ11 – –	– – – –	Closure test with motor operator, open test during reactor vessel injection test.
PSV-248F029A	D-5	2	C	A	1 ½	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-248F029B	F-5	2	C	A	1 ½	RV	SA	–	O/C	RV	RV	RV	–	–	

REACTOR CORE ISOLATION COOLING M-2149

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
249015	E-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
249016	E-5	2	C	A	2	CK	SA	--	C	FS	--	O	--	RR18	
249020	E-5	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
249F011	C-8	2	C	A	6	CK	SA	--	O/C	FS	FS	Q	--	RR17	Open test only.
249F014	E-6	2	C	A	6	CK	SA	--	O	FS	FS	Q	--	--	Open test only.
249F021	F-7	2	A,C	A	2	CK	SA	--	O/C	FS FS LJ	PS FS LJ	Q RF RF	-- RJ13 RJ13	RR20 -- --	Open test. Closure test.
249F028	G-5	2	A,C	A	2	CK	SA	--	C	FS LJ	FS LJ	RF RF	RJ13 RJ13	-- --	
249F030	H-3	2	C	A	6	CK	SA	--	O/C	FS	FS	SD	--	RR16 RR20	
249F040	G-5	2	A,C,	A	10	CK	SA	--	O/C	FS FS LJ	FS FS LJ	Q RF RF	-- RJ13 RJ13	-- -- --	Open test. Closure test.

REACTOR CORE ISOLATION COOLING M-2149 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
249F063	F-4	2	C	A	2	CK	SA	--	O/C	FS FS	PS FS	RF SD	RJ14 --	-- RR19	Open test.
249F064	F-4	2	C	A	2	CK	SA	--	O/C	FS FS	PS FS	RF SD	RJ14 --	-- RR19	Open test.
HV-249F007	C-3	1	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-249F008	C-3	2	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-249F010	C-8	2	B	A	6	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

REACTOR CORE ISOLATION COOLING M-2149 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-249F012	E-6	2	B	A	6	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-249F013	E-5	2	A	A	6	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
FV-249F019	F-3	2	A	A	2	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	Rapid acting valve.
HV-249F022	D-5	2	B	A	4	GB	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-249F025	F-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

REACTOR CORE ISOLATION COOLING M-2149 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-249F026	G-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-249F031	H-2	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-249F059	G-3	2	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-249F060	G-3	2	A	A	2	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

REACTOR CORE ISOLATION COOLING M-2149 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-249F062	F-4	2	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-249F084	F-3	2	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-249F088	C-3	1	A	A	1	GB	AO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
XV-249F044A	A-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-249F044B	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR CORE ISOLATION COOLING M-2149 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-249F044C	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-249F044D	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

RCIC TURBINE-PUMP M-2150

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
250F047	G-5	2	C	A	2	CK	SA	–	C	FS	FS	Q	–	–	
HV-25012	C-7	2	B	A	3	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-250F004	H-5	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-250F005	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-250F045	C-8	2	B	A	4	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-250F046	G-4	2	B	A	2	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
PSE-250D001	B-5	2	D	A	2	RD	SA	–	O	–	–	–	–	–	No testing required.

RCIC TURBINE-PUMP M-2150 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSE-250D002	B-5	2	D	A	2	RD	SA	--	O	--	--	--	--	--	No testing required.
PSV-250F017	C-2	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-250F018	F-5	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

RESIDUAL HEAT REMOVAL M-2151 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
251F031A	H-2	2	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
251F031C	G-3	2	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
251F046A	F-2	2	C	A	4	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
251F046C	F-3	2	C	A	4	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
251F089A	C-4	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
251F090A	C-4	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
HV-251F004A	F-8	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-251F004C	F-8	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	

RESIDUAL HEAT REMOVAL M-2151 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F006A	H-8	2	B	A	20	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-251F006C	G-7	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F007A	F-7	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-251F015A	D-7	1	A	A	24	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 – – –	– – – – –	Pressure isolation valve.

RESIDUAL HEAT REMOVAL M-2151 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F016A	B-5	2	A	A	12	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-251F017A	D-3	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F021A	B-7	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F022	B-8	1	A	A	6	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 – – –	– – – – –	Pressure isolation valve.

RESIDUAL HEAT REMOVAL M-2151 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F023	B-7	1	A	A	6	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 – – –	– – – – –	Pressure isolation valve.
HV-251F024A	E-7	2	B	A	18	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F027A	E-7	2	B	A	6	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F028A	E-5	2	A	A	18	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

RESIDUAL HEAT REMOVAL M-2151 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F040	B-2	2	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F048A	G-1	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F049	B-2	2	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F050A	D-8	1	A,C	A	24	CK	SA	X	O/C	FS PI LJ LT	FS PI LJ LT	CS 2Y 2Y 2Y	CJ08 – – –	– – – –	Pressure isolation valve.

RESIDUAL HEAT REMOVAL M-2151 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F122A	E-8	1	A	A	1	GB	AO	X	C	FS ST PI LJ LT	PS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 -- -- --	-- -- -- -- --	Pressure isolation valve. Rapid acting valve.
PSV-25113	A-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-251F025A	D-2	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-251F030A	H-7	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-251F030C	G-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

RESIDUAL HEAT REMOVAL M-2151 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F003A	F-5	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F011A	H-6	2	A	P	4	GT	MA	X	C	LJ	LJ	2Y	–	–	Disabled.
HV-251F047A	C-8	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F103A	C-3	2	A	P	1	GB	MO	X	C	LJ	LJ	2Y	–	–	
PSV-25106A	F-3	2	A,C	A	1	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
PSV-251F055A	A-5	2	A,C	A	8	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
SV-251F079A	G-4	2	B	A	1	GB	SO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	Rapid acting valve.

RESIDUAL HEAT REMOVAL M-2151 Sheet 3

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
251F031B	G-8	2	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
251F031D	H-8	2	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
251F046B	F-7	2	C	A	4	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
251F046D	F-8	2	C	A	4	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
251F089B	B-6	2	C	A	2	CK	SA	–	C	FS	FS	RF	RJ18	–	Closure test only.
251F090B	B-6	2	C	A	2	CK	SA	–	C	FS	FS	RF	RJ18	–	Closure test only.
HV-251F004B	F-3	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-251F004D	F-1	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F006B	G-3	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	- - -	- - -	
HV-251F006D	H-2	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	- - -	- - -	
HV-251F007B	F-3	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	
HV-251F008	E-3	1	A	A	20	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ09 CJ09 - - -	- - - - -	Pressure isolation valve.

RESIDUAL HEAT REMOVAL M-2151 Sheet 3 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F009	D-1	1	A	A	20	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ09 CJ09 -- -- --	-- -- -- -- --	Pressure isolation valve.
HV-251F015B	C-3	1	A	A	24	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 -- -- --	-- -- -- -- --	Pressure isolation valve.
HV-251F016B	A-5	2	A	A	12	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-251F017B	C-7	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

RESIDUAL HEAT REMOVAL M-2151 Sheet 3 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F021B	A-3	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	- - -	- - -	
HV-251F024B	F-3	2	B	A	18	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	- - -	- - -	
HV-251F027B	E-3	2	B	A	6	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	- - -	- - -	
HV-251F028B	C-6	2	A	A	18	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	

RESIDUAL HEAT REMOVAL M-2151 Sheet 3 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F048B	F-9	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-251F050B	C-2	1	A,C	A	24	CK	SA	X	O/C	FS PI LJ LT	FS PI LJ LT	CS 2Y 2Y 2Y	CJ08 -- -- --	-- -- -- --	Pressure isolation valve.
HV-251F122B	C-2	1	A	A	1	GB	AO	X	C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ08 CJ08 -- -- --	-- -- -- -- --	Pressure isolation valve. Rapid acting valve.
PSV-25193	A-8	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-251F025B	B-8	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-251F029	F-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

RESIDUAL HEAT REMOVAL M-2151 Sheet 3 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-251F030B	G-4	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-251F030D	H-3	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-251F126	D-2	1	A,C	A	1	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
XV-25109A	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-25109B	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-25109C	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-25109D	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

RESIDUAL HEAT REMOVAL M-2151 Sheet 4

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-251F003B	F-4	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F011B	H-3	2	A	P	4	GT	MA	X	C	LJ	LJ	2Y	–	–	Disabled.
HV-251F047B	C-2	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-251F103B	C-7	2	A	P	1	GB	MO	X	C	LJ	LJ	2Y	–	–	
PSV-25106B	F-7	2	A,C	A	1	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
PSV-251F055B	A-4	2	A,C	A	8	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
PSV-251F097	G-2	2	A,C	A	4	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	

RESIDUAL HEAT REMOVAL M-2151 Sheet 4 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-251F079B	G-5	2	B	A	1	GB	SO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	Rapid acting valve.

CORE SPRAY M-2152

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
252005	E-8	2	C	A	3	CK	SA	--	C	FS	--	O	--	RR08	Periodic inspection.
252F003A	E-5	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
252F003B	E-8	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
252F003C	E-6	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
252F003D	E-9	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
252F029A	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
252F029B	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
252F030A	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
252F030B	A-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
252F036A	E-5	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
252F036B	E-8	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.

CORE SPRAY M-2152 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
252F036C	E-6	2	C	A	3	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
252F036D	E-9	2	C	A	3	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
HV-252F001A	H-3	2	A	A	16	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-252F001B	H-1	2	A	A	16	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-252F004A	D-4	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

CORE SPRAY M-2152 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-252F004B	B-4	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-252F005A	D-3	1	A	A	12	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ10 CJ10 -- -- --	-- -- -- -- --	Pressure isolation valve.
HV-252F005B	B-3	1	A	A	12	GT	MO	X	O/C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ10 CJ10 -- -- --	-- -- -- -- --	Pressure isolation valve.
HV-252F006A	D-3	1	A,C	A	12	CK	SA	X	O/C	FS PI LJ LT	FS PI LJ LT	CS 2Y 2Y 2Y	CJ10 -- -- --	-- -- -- --	Pressure isolation valve.

CORE SPRAY M-2152 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-252F006B	B-3	1	A,C	A	12	CK	SA	X	O/C	FS PI LJ LT	FS PI LJ LT	CS WY 2Y 2Y	CJ10 – – –	– – – –	Pressure isolation valve.
HV-252F015A	E-3	2	A	A	10	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-252F015B	E-3	2	A	A	10	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	Leak test in reverse direction.
HV-252F031A	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-252F031B	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-252F037A	D-3	1	A	A	1	GB	AO	X	C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ10 CJ10 – – –	– – – – –	Pressure isolation valve. Rapid acting valve.
HV-252F037B	C-3	1	A	A	1	GB	AO	X	C	FS ST PI LJ LT	FS ST PI LJ LT	CS CS 2Y 2Y 2Y	CJ10 CJ10 – – –	– – – – –	Pressure isolation valve. Rapid acting valve.
PSV-252F012A	D-7	2	C	A	1 ½	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-252F012B	B-7	2	C	A	1 ½	RV	SA	–	O/C	RV	RV	RV	–		

CORE SPRAY M-2152 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-252F032A	G-4	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-252F032B	H-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
XV-252F018A	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-252F018B	A-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

FUEL POOL COOLING & CLEANUP M-2153 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
253071A	B-5	3	C	A	8	CK	SA	--	O	FS FS	PS FS	O SD	--	RR09 RR20	Open test only.
253071B	B-6	3	C	A	8	CK	SA	--	O	FS FS	PS FS	O SD	--	RR09 RR20	Open test only.

HIGH PRESSURE COOLANT INJECTION M-2155

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
255012	E-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
255013	E-5	2	C	A	2	CK	SA	--	C	FS	--	O	--	RR18	Periodic inspection.
255038	E-5	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
255F005	E-6	2	C	A	14	CK	SA	--	O	FS	FS	Q	--	--	Open test only.
255F019	C-8	2	C	A	16	CK	SA	--	O/C	FS	FS	Q	--	RR17	Open test only.
255F045	H-3	2	C	A	16	CK	SA	--	O/C	FS	FS	SD	--	RR16 RR20	
255F046	F-7	2	A,C	A	4	CK	SA	--	O/C	FS FS LJ	PS FS LJ	Q RF RF	-- RJ15 RJ15	RR20 -- --	Open test. Closure test.
255F049	G-5	2	A,C	A	20	CK	SA	--	O/C	FS FS LJ	FS FS LJ	Q RF RF	-- RJ15 RJ15	-- -- --	Open test. Closure test.
255F076	F-4	2	C	A	3	CK	SA	--	O/C	FS FS	PS FS	RF SD	RJ16 --	-- RR19	Open test.

HIGH PRESSURE COOLANT INJECTION M-2155 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
255F077	F-4	2	C	A	3	CK	SA	–	O/C	FS FS	PS FS	RF SD	RJ16 –	– RR19	Open test.
HV-255F001	D-8	2	B	A	10	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-255F002	B-3	2	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-255F003	B-3	1	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-255F004	B-8	2	B	A	16	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

HIGH PRESSURE COOLANT INJECTION M-2155 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-255F006	E-5	2	A	A	14	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ11 CJ11 – –	– – – –	
HV-255F007	E-6	2	B	A	14	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-255F008	D-5	2	B	A	10	GB	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-255F011	C-5	2	B	A	10	GT	MO	X	C	FS SI PI	FS SI PI	Q Q 2Y	– – –	– – –	

HIGH PRESSURE COOLANT INJECTION M-2155 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-255F012	F-3	2	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-255F028	F-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-255F029	G-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-255F042	H-2	2	A	A	16	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	

HIGH PRESSURE COOLANT INJECTION M-2155 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-255F066	G-3	2	A	A	20	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	
HV-255F075	F-4	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	
HV-255F079	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	
HV-255F100	B-3	1	A	A	1	GB	AO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	- - - -	- - - -	Rapid acting valve.

HIGH PRESSURE COOLANT INJECTION M-2155 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
XV-255F024A	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-255F024B	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-255F024C	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-255F024D	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

HPCI TURBINE - PUMP M-2156 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
256F048	G-4	2	C	A	2	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR20	Open test only.
256F052	G-5	2	C	A	2	CK	SA	--	C	FS	FS	Q	--	--	Close test only.
256F057	G-5	2	C	A	2	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR20	Open test only.
FV-25612	B-7	2	B	A	10	GB	HO	X	O/C	FS ST PI	FS -- PI	Q O 2Y	-- -- --	-- RR10 --	
HV-256F025	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-256F026	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-256F059	E-3	2	B	A	2	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

HPCI TURBINE - PUMP M-2156 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-256F020	B-2	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-256F050	G-3	2	C	A	1 ½	RV	SA	--	O/C	RV	RV	RV	--	--	
PSE-256D003	B-5	2	D	A	16	RD	SA	--	O	--	--	--	--	--	No testing required.
PSE-256D004	A-5	S	D	A	16	RD	SA	--	O	--	--	--	--	--	No testing required.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-25703	E-3	2	A	A	18	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25704	E-2	2	A	A	18	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25705	D-3	2	A	A	2	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25711	A-3	2	A	A	2	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-25713	B-4	2	A	A	24	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25714	B-2	2	A	A	24	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25721	C-8	2	A	A	6	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25722	C-5	2	A	A	24	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-25723	D-7	2	A	A	24	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25724	E-6	2	A	A	18	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25725	E-5	2	A	A	18	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ12 CJ12 – –	– RR21 – –	Closure test only.
HV-25766	H-5	2	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-25768	H-4	2	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
PSV-25704A1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704A2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704B1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704B2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704C1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
PSV-25704C2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25604D1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25604D2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704E1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
PSV-25704E2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	-- --	-- --	
SV-25734A	G-2	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25734B	E-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25736A	G-3	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS SI PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25736B	E-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25737	G-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25738	G-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25740A	B-4	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25740B	B-5	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25742A	B-3	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25742B	B-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25750A	C-4	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25750B	B-5	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25752A	C-3	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25752B	B-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25767	C-5	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25774A	C-3	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25774B	D-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25776A	C-4	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25776B	D-5	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25780A	F-3	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.
SV-25780B	F-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 1 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-25782A	F-2	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25782B	F-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.
SV-25789	C-6	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	-- -- RJ19 --	-- -- -- --	Rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 5

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-257104	E-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-257105	E-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-257106	F-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-257107	F-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 6

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-257100A	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257101A	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257102A	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257103A	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.

CONTAINMENT ATMOSPHERE CONTROL M-2157 Sheet 7

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
SV-257100B	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257101B	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257102B	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-257103B	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.

LIQUID RADWASTE COLLECTION M-2161 Sheet 1

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-26108A1	B-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-26108A2	B-5	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-26116A1	G-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-26116A2	H-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	

EMERGENCY SWITCHGEAR ROOM COOLING M-2172

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-27203A	D-4	3	B	A	2	GB	MO	X	T	FS ST PI	PS -- --	Q -- --	-- -- --	RR22 RR22 RR22	Modulating control valve.
HV-27203B	D-9	3	B	A	2	GB	MO	X	T	FS ST PI	PS -- --	Q -- --	-- -- --	RR22 RR22 RR22	Modulating control valve.

REACTOR BUILDING CHILLED WATER M-2187 Sheet 2

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-28781A1	H-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-28781A2	G-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-28781B1	D-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-28781B2	C-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	

REACTOR BUILDING CHILLED WATER M-2187 Sheet 2 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-28782A1	D-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- RR21 -- --	
HV-28782A2	C-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- RR21 -- --	
HV-28782B1	H-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- RR21 -- --	
HV-28782B2	G-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- RR21 -- --	

REACTOR BUILDING CHILLED WATER M-2187 Sheet 2 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-28791A1	B-2	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28791A2	A-2	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28791B1	F-2	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28791B2	E-2	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	

REACTOR BUILDING CHILLED WATER M-2187 Sheet 2 (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
HV-28792A1	F-2	2	A	A	3	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28792A2	E-2	2	A	A	3	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28792B1	B-2	2	A	A	3	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	
HV-28792B2	A-2	2	A	A	3	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ13 CJ13 -- --	-- RR21 -- --	

TRAVERSING INCORE PROBE (TIP) (No P&ID)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
2S240A TIP Channel A Man Valve	N/A	S	A	A	⅜	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
2S240A TIP Channel A Squib Valve	N/A	S	D	A	⅜	EX	EX	--	C	EX	EX	2Y	--	--	
2S240B TIP Channel B Man Valve	N/A	S	A	A	⅜	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
2S240B TIP Channel B Squib Valve	N/A	S	D	A	⅜	EX	EX	--	C	EX	EX	2Y	--	--	
2S240C TIP Channel C Man Valve	N/A	S	A	A	⅜	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.

TRAVERSING INCORE PROBE (TIP) (No P&ID) (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
2S240C TIP Channel C Squib Valve	N/A	S	D	A	⅜	EX	EX	X	C	EX	EX	2Y	--	--	
2S240D TIP Channel D Man Valve	N/A	S	A	A	⅜	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
2S240D TIP Channel D Squib Valve	N/A	S	D	A	⅜	EX	EX	--	C	EX	EX	2Y	--	--	
2S240E TIP Channel E Man Valve	N/A	S	A	A	⅜	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.

TRAVERSING INCORE PROBE (TIP) (No P&ID) (Continued)

Valve Number	P&ID Coordinates	ASME Class	ASME Category	Active/Passive	Valve Size (inches)	Valve Type	Actuator Type	Remote Position Indication	Safety Position	Tests Required	Tests Performed	Test Frequency	CS/RO Justification	Relief Request(s)	Remarks
2S240E TIP Channel E Squib Valve	N/A	S	D	A	3/8	EX	EX	–	C	EX	EX	2Y	–	–	

COLD SHUTDOWN TEST JUSTIFICATIONS

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 01

System:	Reactor Building Closed Cooling Water
P&ID:	M-2113
Valves:	HV-21313 HV-21314 HV-21345 HV-21346
Category:	A
Class:	2
Function:	Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These valves are in the cooling water supply and return lines for the reactor recirculation pump bearing and seal coolers. Cycling of these valves during power operation would interrupt this cooling water flow, possibly causing pump bearing damage or seal failure.

Alternative Testing: Exercise valves during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 02

System:	Containment Instrument Gas
P&ID:	M-2126
Valves:	SV-22651
Category:	A
Class:	2
Function:	Containment Isolation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: Closing this valve interrupts instrument gas supply to several important valves inside containment such as the Safety/Relief Valves (non-ADS function) and the MSIVs. This could compromise the ability of the SRV's to operate in the relief mode which, while not an ECCS function, is important to safety. Loss of instrument gas could also cause the MSIVs to close, resulting in a severe reactor transient.

Alternative Testing: Exercise valve during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 03

System: Containment Instrument Gas

P&ID: M-2126

Valves: SV-22654A
SV-22654B

Category: A

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: Closing these valves will interrupt instrument gas supply to the ADS solenoids of the Safety/Relief Valves, compromising their ability to provide the opening motive force for the ADS valves in support of the long-term cooling ECCS function.

Alternative Testing: Exercise valves during cold shutdown (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 04

System: MSIV-Leakage Control

P&ID: M-2139

Valves	Category	Class
HV-239F001 B, F, K, P	A	1
HV-239F002 B, F, K, P	B	2

Function: Containment Isolation; System Initiation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: The MSIV-LCS inboard bleed lines are directly connected to the main steam lines at the outboard MSIV. During power operations, these lines are pressurized with main steam up to the first isolation valve (HV-239F001 B,F,K,P). Double valve isolation is provided by HV-239F002 B,F,K,P. Opening any of these valves during power operations will leave only one barrier against the release of main steam to occupied plant areas through the system piping. Maintenance of double valve isolation is desired for personnel safety considerations and for prevention of inadvertent leakage paths from the main steam lines.

Alternative Testing: Exercise during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 05

System: MSIV-Leakage Control

P&ID: M-2139

Valves: HV-239F006
HV-239F007
HV-239F008
HV-239F009

Category: B

Class: 2

Function: System Initiation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: The MSIV-LCS outboard bleed and blowdown lines are directly connected to the main steam system at the steam line drain. During power operations these lines are pressurized with main steam up to the first isolation valve (HV-239F006, HV-239F008). Double valve isolation is provided by HV-239F007 and HV-239F009. Opening any of these valves will leave only one barrier against the release of main steam to occupied plant areas through system piping. Maintenance of double valve isolation is desired for personnel safety considerations and for prevention of inadvertent leakage paths from the main steam lines.

Alternative Testing: Exercise during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 06

System: Nuclear Boiler

P&ID: M-2141

Valves: HV-241F022 A,B,C,D
HV-241F028 A,B,C,D

Category: A

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: During full power operation, it is impractical to full stroke cycle these valves, since the interruption in steam flow would induce a reactor pressure transient with increased probability of reactor scram, main steam line isolation and SRV actuation.

Alternative Testing: Full stroke testing will be performed in Operational Condition 1, 2, or 3 preceding or following a cold shutdown when power level is low enough to prevent the above mentioned transients (no more frequently than once per 92 days). No reduction from high power levels will be made specifically to accomplish this testing.

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 07

System:	Reactor Recirculation
P&ID:	M-2143
Valves:	HV-243F031 A,B
Category:	B
Class:	1
Function:	Reactor Recirculation Pump Discharge Isolation, LPCI flowpath.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: The recirculation pump discharge isolation valves are in the main flowpath of the reactor recirculation system which is necessary to maintain reactivity control of the reactor. Cycling of these valves during power operations would interrupt the driving core flow, possibly resulting in severe changes in core power level.

Alternative Testing: Technical Specification 4.4.1.1.1.1 provides for and controls the exercising of these valves prior to exceeding 25% power during each startup (if not completed within the previous 31 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 08

System: Residual Heat Removal

P&ID: M-2151 Sh. 1 and Sh. 3

Valve	Category
HV-251F015A	A
HV-251F015B	A
HV-251F022	A
HV-251F023	A
HV-251F050A	A,C
HV-251F050B	A,C
HV-251F122A	A
HV-251F122B	A

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These normally closed isolation valves serve as the pressure isolation between RHR system piping and reactor coolant pressure. In accordance with guidance presented in IE Information Notice 84-74, draft R.G. 901-4, and previous NRC concerns regarding intersystem LOCAs, cycling these valves every 92 days during power operation increases the probability of exposing the downstream low pressure piping to reactor coolant pressure (since only one valve would have to be ruptured or stuck open to expose the low pressure system to reactor coolant pressure). Maintenance history on these valves has shown that excessive cycling at pressure will reduce the leak tightness of the valves. In addition, failure of these valves during testing to positively re-seat could cause loss of RHR system function.

Alternative Testing: Exercise valves during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 09

System: Residual Heat Removal

P&ID: M-2151 Sh. 3

Valves: HV-251F008, HV-251F009

Category: A

Class: 1

Function: Containment Isolation (Shutdown Cooling)

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These normally closed isolation valves are only required to open when bringing the unit to a cold shutdown condition, providing the flowpath for the shutdown cooling mode of RHR. In accordance with guidance presented in IE Information Notice 84-74, draft R.G. 901-4, and previous NRC concerns regarding intersystem LOCAs, cycling these valves every 92 days during power operation increases the probability of exposing the downstream low pressure piping to reactor coolant pressure (since only one valve would have to be ruptured or failed open to expose the low pressure system to reactor coolant pressure). During reactor operations above approximately 100 psig, interlocks inhibit cycling of these valves for the express purpose of protecting low pressure piping.

Alternative Testing: Exercise valves during cold shutdown (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 10

System: Core Spray

P&ID: M-2152

Valves	Category
HV-252F005A	A
HV-252F005B	A
HV-252F006A	A,C
HV-252F006B	A,C
HV-252F037A	A
HV-252F037B	A

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These normally closed Isolation valves serve as the pressure isolation between CS system piping and reactor vessel pressure. In accordance with guidance presented in IE Information Notice 84-74, draft R.G. 901-4, and previous NRC concerns regarding intersystem LOCAs, cycling these valves every 92 days during power operation increases the probability of exposing the downstream low pressure piping to reactor coolant pressure (since only one valve would have to be ruptured or failed open to expose the low pressure system to reactor coolant pressure). In addition, failure of these valves after testing to positively reseat could cause loss of Core Spray system function.

Alternative Testing: Exercise valves during cold shutdown (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 11

System: High Pressure Coolant Injection

P&ID: M-2155

Valve: HV-255F006

Category: A

Class: 2

Function: Containment Isolation, HPCI Injection

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: This valve is in the HPCI injection flowpath. The interlocks on this valve prevent its being open unless the Steam Admission and Turbine Stop Valves are open. This is only possible during pump flow testing. Cycling this valve during normal plant operation or HPCI testing may lead to HPCI injection into the vessel. This would affect reactor operations and introduce a thermal transient in the vessel nozzle.

Alternative Testing: Exercise valve during cold shutdowns (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 12

System: Containment Atmosphere Control

P&ID: M-2157 Sht. 1

Valves:

HV-25703	HV-25713	HV-25723
HV-25704	HV-25714	HV-25724
HV-25705	HV-25721	HV-25725
HV-25711	HV-25722	

Category: A

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: These normally closed containment isolation valves on the containment purge inlet and exhaust lines are not opened during power operations except during startup for inerting purposes and during shutdown procedure to de-inert. It is not good practice to cycle a normally closed containment isolation valve, as this increases the possibility of failure in the open position. Technical Specification 3.6.1.8 controls and limits the amount of time these valves can be open in a one-year period.

Alternative Testing: Exercise valves at cold shutdown (no more frequently than once per 92 days).

COLD SHUTDOWN TEST JUSTIFICATION NUMBER 13

System:	Reactor Building Chilled Water	
P&ID:	M-2187 Sh. 2	
Valves:	HV-28791A1	HV-28792A1
	HV-28791A2	HV-28792A2
	HV-28791B1	HV-28792B1
	HV-28791B2	HV-28792B2
Category:	A	
Class:	2	
Function:	Containment Isolation	

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These containment isolation valves are located in the Reactor Building Chilled Water supply and return lines serving the Reactor Recirculation pump motor coolers. The closure of these valves during power operation will interrupt cooling water flow to the Reactor Recirculation motor coolers, which creates the possibility of overheating and damage.

Alternative Testing: Exercise valves during cold shutdowns (no more frequently than once per 92 days).

REFUELING OUTAGE TEST JUSTIFICATIONS

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 01

System: Containment Instrument Gas

P&ID: M-2126

Valves: 226018 and 226029

Category: C

Class: 2

Function: Provide Actuating Gas to Automatic Depressurization Feature of Main Steam Relief Valves.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis For Deferment: Closure of the subject valves for exercise testing interrupts instrument gas supply to the ADS solenoids of the Safety/Relief Valves, compromising their ability to provide the opening motive force for the ADS valves, in support of the long-term cooling ECCS function. Due to the configuration of the CIG System, depressurization and venting of sufficient pipe lines to permit closure exercise testing of these valves further interrupts instrument gas supply to several important valves inside containment, such as the Safety/Relief Valves (non-ADS relief function) and the MSIV'S. This could compromise the ability of the SRV's to operate in the relief mode which, while not an ECCS function, is important to safety. Loss of instrument gas supply could also cause the MSIV's to close, resulting in a severe reactor transient if operating; or in an undesirable ESF actuation, if shut down. Loss of instrument gas supply could also cause isolation of the drywell cooling lines, resulting in a drywell temperature excursion.

Testing of these check valves at every cold shutdown is not practical because it requires isolation of a line feeding 25 air operated primary containment isolation valves. Isolation of this line at any time other than at a refueling outage creates the danger of unplanned actuations of Engineered Safety Features. Additionally, 4 of these 25 air operated containment isolation valves isolate drywell cooling lines.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 01 (Cont'd.)

Unplanned isolation of drywell cooling during cold shutdown could cause a containment temperature transient that could exceed the design maximum temperature of the drywell. Only during refueling outages are provisions made for temporary additional cooling of the drywell.

Alternative Testing: Demonstrate closure of each check valve by monitoring the essential restriction of its reverse airflow, through the test connection downstream of the opposite division check valve, once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 02

System: Containment Instrument Gas

P&ID: M-2126

Valves: 226072
226074
226152
226154
226164

Category: A, C

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These check valves serve the containment isolation function inside containment and are not equipped with remote position indicators. Downstream of the valves (inside containment) there are no pressure measurement devices or other means of remotely verifying valve position. The only practical method of closure testing involves pressurizing the downstream side and measuring pressures with temporary instrumentation. With the inerted containment, such testing can only be performed during a major outage which requires containment purging. This testing, which requires significant effort in the installation and removal of temporary equipment in the high radiation area of the containment drywell, is already performed during Category A leak rate testing.

Two valves, 226152 and 226154, serve a safety function on opening as well as their containment isolation function. The open test cannot be performed as there would be no positive indication (flow measurements) of function. Operation of the equipment serviced by these valves (ADS function of the safety/relief valves) will not verify their proper opening since the accumulators at the SRV operators provide capacity for several lifts. Performing continued lifts in an attempt to verify check

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 02 (Cont'd.)

valve opening will increase the potential for SRV leakage or failure to reseat, will impact proper maintenance of reactor pressure control, and has the potential for degradation of the ADS function.

Alternative Testing: Valve closure is demonstrated by completion of leak rate testing performed once per refueling outage. Commencing with the first refueling outage, verification of the opening capability of valves 226152 and 226154 will also be performed at that time with an air pressure applied through the outboard test valves (226021, 226031), opening the inboard test valves (226155, 226153), and observing essentially unrestricted flow.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 03

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REFUELING OUTAGE TEST JUSTIFICATION NUMBER 04

System: Nuclear Boiler

P&ID: M-2141

Valves: 241F010 A;B

Category: A, C

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valves closed once per 92 days.

Basis for Deferment: These check valves remain open maintaining the flowpath to the vessel whenever the feedwater/condensate, HPCI or RCIC systems are providing makeup to the vessel or when Reactor Water Cleanup is returning flow to the vessel. Due to the necessity of maintaining this flowpath in virtually all modes of operation, closure testing is only practical during extended outages such as refuelings during which these systems are shutdown. Also, plant design does not provide a practical means of demonstrating closure other than by upstream pressurization performed during leak rate testing. This testing involves significant effort for installation of temporary equipment, and requires complete purging of the inerted reactor containment.

Alternative Testing: Proper valve closure will be verified in by completion of leak rate testing performed once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 05

System: Nuclear Boiler - MSIV

P&ID: M-2141

Valves:

241F024A	241F029A
241F024B	241F029B
241F024C	241F029C
241F024D	241F029D

Category: C

Class: 3

Function: Prevent reverse flow out through MSIV accumulator inlet (air) line.

Impractical Test Requirement: Exercise valves (to their closed positions) once per 92 days.

Basis For Deferment: These check valves, located in MSIV accumulator inlet (air) lines provide Containment Instrument Gas System and Instrument Air System gas flow into their respective MSIV accumulators, while preventing flow of gas stored in the MSIV accumulator in the reverse direction, during closure of their respective MSIV's at the onset of a LOCA. Plant configuration and exclusion of personnel from the purged drywell during operation preclude completion of closure exercise testing throughout the period of each plant operating cycle. Any exercise testing of these check valves requires or causes closure of the associated MSIVs, rendering it impractical except during refueling outages. The design basis of these check valves for the inboard MSIVs is established by PP&L Calculations M-MSS-025 and M-MSS-028, from which testing appropriate to their safety function is derived.

Exercise testing of these check valves requires both access to each MSIV accumulator and that the MSIV associated with each check valve tested remain closed throughout the test to prevent unplanned actuations of Engineered Safety Features. As the primary containment is not opened and entered during every cold shutdown and as plant configuration does not always support MSIV closure

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 05 (Cont'd.)

while primary containment entry is in progress, exercise testing of these check valves is not practical at every cold shutdown, and can be performed safely and reliably only during each refueling outage.

Alternative Testing: Demonstrate closure of each MSIV accumulator check valve by monitoring the essential restriction of its reverse flow of gas, through measurement of the rate of decay of pressure in its respective MSIV accumulator (downstream of the check valve under test) once per refueling outage. This MSIV accumulator pressure decay test provides verification of the closure of the inlet check valve.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 06

System: Nuclear Boiler - MSRV

P&ID: M-2141

Valves:

241F036A	241F036J	241F036S
241F036B	241F036K	241F040G
241F036C	241F036L	241F040J
241F036D	241F036M	241F040K
241F036E	241F036N	241F040L
241F036F	241F036P	241F040M
241F036G	241F036R	241F040N
241F036H		

Category: C

Class: 3

Function: Prevent reverse flow out through SRV accumulator inlet (air) line.

Impractical Test Requirement: Exercise valves (to their closed positions) once per 92 days.

Basis For Deferment: These check valves, located in SRV accumulator inlet (air) lines provide Containment Instrument Gas System gas flow into their respective SRV accumulators, while preventing flow of gas stored in the SRV accumulator in the reverse direction during opening of SRV's in either the ADS mode or the manually controlled relief mode. Plant configuration and exclusion of personnel from the purged drywell during operation preclude completion of closure exercise testing throughout the period of each operating cycle. Exercise testing of these check valves requires access to each SRV accumulator. As the primary containment is not opened and entered during every cold shutdown, exercise testing of these check valves is not practical at every cold shutdown, and can be performed safely and reliably only during each refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 06 (Cont'd.)

Alternative Testing: Demonstrate closure of each SRV accumulator check valve by monitoring the essential restriction of its reverse flow of gas, through measurement of the rate of decay of pressure in its respective SRV accumulator (downstream of the check valve under test) once per refueling outage. This SRV accumulator pressure decay test provides verification of the closure of the inlet check valve.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 07

System: Nuclear Boiler

P&ID: M-2141

Valves: HV-241F032 A,B

Category: A, C

Class: 2

Function: Containment isolation; HPCI flowpath (HV-241F032B only); RCIC flowpath (HV-241F032A only).

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment:

a. These check valves remain open maintaining the flowpath to the vessel whenever the feedwater/ condensate systems are providing makeup to the vessel. Interruption of the feedwater flowpath by motor operator closure of these valves can only be practically accomplished during cold shutdowns.
b. No practical means other than upstream pressurization similar to leak rate testing is available to demonstrate valve closure as check valves.

Alternative Testing:

a. Cycle valves shut using stop-check motor operators during cold shutdowns (no more frequent than once per 92 days).
b. Closure testing as check valves will be demonstrated by completion of leak rate testing to be performed once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 08

System: Nuclear Boiler Vessel Instrumentation

P&ID: M-2142

Valve:

242032	242044	242059	242071
242033	242045	242060	242072

Category: A, C

Class: Non-Code Safety Function

Function: Prevent reverse flow out through backfill line.

Impractical Test Requirement: Exercise valves (to their closed positions) once per 92 days.

Basis for Deferment: These check valves, located in backfill lines for the reactor water level instrumentation, provide Control Rod Drive Hydraulic System water flow into their respective instrument line reference legs, while preventing flow of instrument line water inventory in the reverse direction. To support the continued integrity of the reactor water level instrumentation during accident conditions, these check valves have been assigned a very small reverse flow leakage limit (0.5 lbm/hr) by PP&L. These check valves have been designed for periodic removal from their system and bench testing of their reverse flow leakage, to facilitate the demonstration that they meet their unusually small leakage limit. Removal of these check valves from the system for exercise testing and leakage testing on a test bench is not practical during periods of plant operation nor during periods of plant cold shutdown because their isolation for removal and testing causes loss of some reactor water level indication in the control room and creates the potential for actuation of Engineered Safety Features (ESF's) associated with each of the instrument lines being isolated. Loss of control room indication of reactor water level on some instruments is acceptable and prevention of unplanned ESF actuations is possible only during refueling outages. Further, removal, testing, and reinstallation of the check valves produces a risk of introducing air into the reference leg piping. As the purpose of this equipment is prevention of gas

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 08 (Cont'd)

entrainment in the reference leg piping, removal, testing, and reinstallation of the check valves may be attempted only during refueling outages.

Alternative Testing: Demonstrate closure of each check valve in the reactor water level instrumentation backfill lines and demonstrate reverse flow leakage of each check valve less than its limit once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 09

System: Reactor Recirculation

P&ID: M-2143

Valves: 243F013 A,B

Category: A, C

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These simple check valves serve as containment isolation valves inside containment. The valves are not equipped with remote indication and there is no pressure indication downstream of the valves. For these valves, closure testing is only practical through pressurization downstream of the valve with the upstream piping vented, and verification of the absence of flow upstream. Interruption of the CRD flow (seal purge) during Reactor Recirculation Pump operation to perform this testing could result in seal damage. This type of testing can only be performed during a period when the containment is accessible. The deinerting of the containment will only be performed during major outages and the testing will be performed during local leak rate testing.

Alternative Testing: Valve closure is demonstrated by completion of leak rate testing performed once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 10

System:	Reactor Recirculation
P&ID:	M-2143
Valves:	XV-243F017 A,B
Category:	A, C
Class:	2
Function:	Containment Isolation

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: Closure testing of these excess flow check valves involves depressurization of the CRD system side of the valves and verification that the valve will close and stop excess flow. Such actions require interruption of seal water to the recirculation pumps, which creates a potential for pump seal damage; disruption of CRD Hydraulic System flow; and installation of temporary equipment.

Alternative Testing: Closure testing will be demonstrated by completion of leak rate testing to be performed once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 11

System: Standby Liquid Control

P&ID: M-2148

Valves: HV-248F006

Category: A, C

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: To verify proper opening of this stop-check valve, it is necessary to pass fluid through the valve. This action would result in an injection into the reactor vessel and would require actuation of an explosive valve. Both actions are undesirable during power operations. Closure testing as a motor-operated stop-check valve during power operations presents the danger of having the disc stick in the closed position, blocking the only SLC injection flowpath, with no means of detecting the failure.

Alternative Testing: The proper functioning of the Standby Liquid Control System injection flowpath, including opening of HV-248F006, will be demonstrated once per 18 months in accordance with Technical Specification Section 4.1.5.d. Closure testing of the valve by motor operator will be performed just prior to the injection testing once per 18 months.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 12

System: Standby Liquid Control

P&ID: M-2148

Valves: 248F007

Category: A, C

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: To verify proper opening of this check valve, it is necessary to pass fluid through the valve. This action would result in an injection into the vessel and would require actuation of an explosive valve, both undesirable during power operations. Closure testing is only practical by pressurizing downstream of the valve (the upstream side being vented) and verifying absence of flow in the upstream side. This requires installation of temporary equipment and access to the containment which is inerted during power operation.

Alternative Testing: The proper functioning of the Standby Liquid Control System injection flowpath, including opening of 248F007, will be demonstrated once per 18 months in accordance with Technical Specification Section 4.1.5.d. Valve closure is demonstrated by completion of leak rate testing performed once per 18 months.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 13

System: Reactor Core Isolation Cooling

P&ID: M-2149

Valves: 249F028, 249F040, 249F021

Category: A, C

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: These check valves are not equipped with position indication and system design does not provide any practical method of verifying closure other than pressurization similar to leak rate testing. Such testing requires installation of temporary equipment which is impractical on a quarterly basis, and it would render the RCIC system inoperable during the testing period. While RCIC is not an ECCS system, it is important to safety and can provide an additional margin for prevention or mitigation of reactor transients. Normally, testing of this type is accomplished by required containment local leak rate testing in accordance with 10CFR50, Appendix J. More frequent performance represents an unnecessary burden on the licensee.

Alternative Testing: Demonstrate closure by completion of leak rate testing performed once per refueling outage.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 14

System: Reactor Core Isolation Cooling

P&ID: M-2149

Valves: 249F063, 249F064

Category: C

Class: 2

Function: Vacuum Breaker

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: These vacuum breakers installed on the RCIC turbine exhaust line are not provided with position indication equipment nor is there pressure indication installed that would provide positive verification of valve operation. A practical method of testing involves supplying low pressure air upstream of the valve and verifying that flow can be detected downstream of the valve. This test method involves installation of temporary equipment and is not practical except during major outages, and it would render the RCIC system inoperable during the testing period. While RCIC is not an ECCS system, it is important to safety and can provide an additional margin for prevention or mitigation of reactor transients. More frequent performance represents an unnecessary burden on the licensee.

Alternative Testing: Demonstrate opening once per refueling outage in conjunction with leak rate testing.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 15

System: High Pressure Coolant Injection

P&ID: M-2155

Valves: 255F049, 255F046

Category: A, C

Class: 2

Function: Containment Isolation

Impractical Test Requirement: Exercise valve closed once per 92 days.

Basis for Deferment: This valve is not equipped with position indication. Its configuration with an open discharge into the suppression pool prevents usage of reverse flow to demonstrate closure. No practical method exists to perform closure testing other than the downstream pressurization of leak rate testing. Such testing requires installation of temporary equipment and closure of valves which renders the system inoperable.

Alternative Testing: Demonstrate closure once per refueling outage by completion of leak rate testing.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 16

System: High Pressure Coolant Injection

P&ID: M-2155

Valves: 255F076, 255F077

Category: C

Class: 2

Function: Vacuum Breaker

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Deferment: These vacuum breakers installed on the HPCI turbine exhaust line are not provided with position indication equipment nor is there pressure indication installed that would provide positive verification of valve operation. A practical method of testing involves supplying low pressure air upstream of the valves and verifying that flow can be detected downstream of the valve. This test method involves installation of temporary equipment and is not practical except during major outages. Its implementation would also require temporary removal of the HPCI System from service.

Alternative Testing: Demonstrate opening once per refueling outage in conjunction with leak rate testing.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 17

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REFUELING OUTAGE TEST JUSTIFICATION NUMBER 18

System	P&ID	Valve Number	Class
RCIC	M-2149	249015	2
RHR	M-2151	251F089A	2
RHR	M-2151	251F089B	2
RHR	M-2151	251FO90A	2
RHR	M-2151	251FO90B	2
Core Spray	M-2152	252FO29A	2
Core Spray	M-2152	252FO29B	2
Core Spray	M-2152	252FO30A	2
Core Spray	M-2152	252FO30B	2
HPCI	M-2155	255012	2
ESW	M-2111	211165A	3
ESW	M-2111	211165B	3

Category: C

Function: Prevent reverse flow out through keepfill line.

Impractical Test Requirement: Exercise valves (to their closed positions) once per 92 days.

Basis For Deferment: The check valves located in keepfill lines for the RHR, Core Spray, RCIC and HPCI Systems provide Condensate Transfer System water flow into their respective headers, while preventing flow of process water in the reverse direction, during operation of the respective ECCS System. In the RHR, RCIC and HPCI Systems, test connections exist between the two tandem check valves existing in each line, while in the Core Spray System, a single test connection exists upstream of both check valves, which are located very close together. These configurations allow individual testing of the downstream check valve in the RHR, RCIC and HPCI Systems, but support only dual testing

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 18 (Cont'd.)

of each pair of Core Spray System check valves in combination. Using these test connections in RHR, Core Spray, RCIC and HPCI to monitor essential restriction of reverse flow involves collecting radioactively contaminated seepage while the process system is pressurized, as during flow testing. This creates the potential for spills and spread of contamination. The increase inpotential for water hammer in these systems due to isolation of keepfill lines during testing, the increase in personnel radiation exposure required to perform this testing duringplant operation, and the increase in potential for contamination of personnel and equipment through this testing justify reduced frequency. The stainless steel construction of each check valve and the series configuration of each pair of check valves reduce the probability of failure to restrict reverse flow through any keepfill line. The relatively small size of each keepfill line minimizes the impact of any such failure. The combination of these mitigating factors warrant reduction in testing frequency.

The single check valves located in the keepfill lines for the ESW System provide Service Water System flow into their respective headers, while preventing flow of process water in the reverse direction, during operation of ESW System. Test connections upstream of each check valve support testing of its reverse flow individually. Using these test connections in ESW to monitor essential restriction of reverse flow involves collecting raw service water seepage, which has the potential to chemically contaminate and degrade the operation of the plant Liquid Radwaste System. The stainless steel construction of each check valve reduces the probability of failure to restrict reverse flow through any keepfill line. The relatively small size of each keepfill line minimizes the impact of any such failure. The combination of these mitigating factors warrant reduction in testing frequency.

Alternative Testing: Demonstrate closure of each check valve in the keepfill lines of the RHR, RCIC and HPCI Systems by monitoring the essential restriction of its reverse flow, through its upstream test connection, once per refueling outage while the process system is pressurized, as during flow testing.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 18 (Cont'd)

Demonstrate closure of at least one of the two check valves in each pair in the keepfill lines of the Core Spray System by monitoring the essential restriction of their reverse flow, through their upstream test connections, once per refueling outage while the process system is pressurized, as during flow testing.

Demonstrate closure of each check valve in the keepfill lines of the ESW System by monitoring the essential restriction of their reverse flow, through their upstream test connections, once per 18 months ($\pm$3 months) while the process system is pressurized, as during flow testing.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19

System	P&ID	Valve	Category	Class	Function
CIG	M-2126	SV-22605	A	2	Containment Isolation
CIG	M-2126	SV-22643	B	3	Instrument Gas Storage
CIG	M-2126	SV-22644	B	2	Instrument Gas Storage
CIG	M-2126	SV-22648	B	3	Instrument Gas Storage
CIG	M-2126	SV-22649	B	2	Instrument Gas Storage
CIG	M-2126	SV-22651	A	2	Containment Isolation
CIG	M-2126	SV-22654A	A	2	Containment Isolation
CIG	M-2126	SV-22654B	A	2	Containment Isolation
CIG	M-2126	SV-22661	A	2	Containment Isolation
CIG	M-2126	SV-22671	A	2	Containment Isolation
CAC	M-2157	SV-25734A	A	2	Containment Isolation
CAC	M-2157	SV-25734B	A	2	Containment Isolation
CAC	M-2157	SV-25736A	A	2	Containment Isolation
CAC	M-2157	SV-25736B	A	2	Containment Isolation
CAC	M-2157	SV-25737	A	2	Containment Isolation
CAC	M-2157	SV-25738	A	2	Containment Isolation
CAC	M-2157	SV-25740A	A	2	Containment Isolation
CAC	M-2157	SV-25740B	A	2	Containment Isolation
CAC	M-2157	SV-25742A	A	2	Containment Isolation
CAC	M-2157	SV-25742B	A	2	Containment Isolation
CAC	M-2157	SV-25750A	A	2	Containment Isolation
CAC	M-2157	SV-25750B	A	2	Containment Isolation
CAC	M-2157	SV-25752A	A	2	Containment Isolation
CAC	M-2157	SV-25752B	A	2	Containment Isolation
CAC	M-2157	SV-25767	A	2	Containment Isolation
CAC	M-2157	SV-25774A	A	2	Containment Isolation

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19 (Cont'd)

System	P&ID	Valve	Category	Class	Function
CAC	M-2157	SV-25774B	A	2	Containment Isolation
CAC	M-2157	SV-25776A	A	2	Containment Isolation
CAC	M-2157	SV-25776B	A	2	Containment Isolation
CAC	M-2157	SV-25780A	A	2	Containment Isolation
CAC	M-2157	SV-25780B	A	2	Containment Isolation
CAC	M-2157	SV-25782A	A	2	Containment Isolation
CAC	M-2157	SV-25782B	A	2	Containment Isolation
CAC	M-2157	SV-25789	A	2	Containment Isolation
CAC	M-2157	SV-257100A	A*	2	Containment Isolation
CAC	M-2157	SV-257100B	A*	2	Containment Isolation
CAC	M-2157	SV-257101A	A*	2	Containment Isolation
CAC	M-2157	SV-257101B	A*	2	Containment Isolation
CAC	M-2157	SV-257102A	A*	2	Containment Isolation
CAC	M-2157	SV-257102B	A*	2	Containment Isolation
CAC	M-2157	SV-257103A	A*	2	Containment Isoaltion
CAC	M-2157	SV-257103B	A*	2	Containment Isolation
CAC	M-2157	SV-257104	A*	2	Containment Isolation
CAC	M-2157	SV-257105	A*	2	Containment Isolation
CAC	M-2157	SV-257106	A*	2	Containment Isolation
CAC	M-2157	SV-257107	A*	2	Containment Isolation

* Passive valve - disabled in closed position.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19 (Cont'd)

Impractical Test Requirement: Valves with Remote Position Indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated.... Where local observation is not possible, other indications shall be used for verification of valve operation.

Basis For Deferment: The subject solenoid valves, all of which are manufactured by the Target Rock Corporation, all are constructed in a manner that precludes local verification of valve operation by direct observation. All movements and positions of valve parts are obscured by the valve structure within which they travel and within which they are sealed. A method for indirect observation of valve movement, utilizing ferritic steel objects (steel shot) moved along the surface of each valve's indicating tube by the permanent magnet attached to the valve stem inside, was devised, used for 18 months, and subsequently abandoned because its employment necessitated partial disassembly of the solenoid valve for the test. This disassembly and reassembly, consisting of removal and reinstallation of the reed switch housing assembly, or cover, has been found to cause damage to the wiring and its connections to the reed switches.

Alternative Testing: Confirmation of coincident valve movement and remote indication is accomplished by listening to the valve with a stethoscope, for the audible signal of the valve disk arriving at a new position. Accuracy of remote indication of valve operation is essentially verified for these solenoid valves once per refueling outage by the combination of containment isolation valve leak testing (LLRT) (or instrument gas storage leakdown testing) with accomplishment of General Operating Procedures (GO-200-002) for plant startup and heatup. These activities are completed at least once each refueling outage, as follows:

System	Valve	Refueling Shutdown Testing Procedure	Verified Valve Position	Startup Procedure(s)	Verified Valve Position
CIG	SV-22605	SE-259-067	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22643	TP-225-007	Open	OP-225-001/GO-200-002	Open
CIG	SV-22644	TP-225-007	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22648	TP-225-009	Open	OP-225-001/GO-200-002	Open
CIG	SV-22649	TP-225-009	Closed	OP-225-001/GO-200-002	Open

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19 (Cont'd)

System	Valve	Refueling Shutdown Testing Procedure	Verified Valve Position	Startup Procedure(s)	Verified Valve Position
CIG	SV-22651	SE-259-037	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22654A	SE-259-046	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22654B	SE-259-038	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22661	SE-259-069	Closed	OP-225-001/GO-200-002	Open
CIG	SV-22671	SE-259-090	Closed	OP-225-001/GO-200-002	Open
CAC	SV-25734A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25734B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25736A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25736B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25737	SE-259-103	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25738	SE-259-103	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25740A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25740B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25742A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25742B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25750A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25750B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25752A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25752B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25767	SE-259-102	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25774A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25774B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25776A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25776B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25780A	SE-259-019	Closed	OP-273-001/GO-200-002	Open

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19 (Cont'd)

System	Valve	Refueling Shutdown Testing Procedure	Verified Valve Position	Startup Procedure(s)	Verified Valve Position
CAC	SV-25780B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25782A	SE-259-019	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25782B	SE-259-020	Closed	OP-273-001/GO-200-002	Open
CAC	SV-25789	SE-259-102	Closed	OP-273-001/GO-200-002	Open
CAC	SV-257100A	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257100B	SE-259-020	Closed	Valve disabled	Closed
CAC	SV-257101A	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257101B	SE-259-020	Closed	Valve disabled	Closed
CAC	SV-257102A	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257102B	SE-259-020	Closed	Valve disabled	Closed
CAC	SV-257103A	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257103B	SE-259-020	Closed	Valve disabled	Closed
CAC	SV-257104	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257105	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257106	SE-259-019	Closed	Valve disabled	Closed
CAC	SV-257107	SE-259-019	Closed	Valve disabled	Closed

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 20

System	P&ID	Valve	System	P&ID	Valve
MSIV-LCS (183)	M-2139	XV-23910B	RPV (continued)	M-2142	XV-242F043B
		XV-23910F			XV-242F045A
		XV-23910K			XV-242F045B
		XV-23910P			XV-242F047A
RPV	M-2141	XV-241F009			XV-242F047B
Main Steam	M-2141	XV-241F070A			XV-242F051A
		XV-241F070B			XV-242F051B
		XV-241F070C			XV-242F051C
		XV-241F070D			XV-242F051D
		XV-241F071A			XV-242F053A
		XV-241F071B			XV-242F053B
		XV-241F071C			XV-242F053C
		XV-241F071D			XV-242F053D
		XV-241F072A			XV-242F055
		XV-241F072B			XV-242F057
		XV-241F072C			XV-242F059A
		XV-241F072D			XV-242F059B
		XV-241F073A			XV-242F059C
		XV-241F073B			XV-242F059D
		XV-241F073C			XV-242F059E
		XV-241F073D			XV-242F059F
RPV	M-2142	XV-24201			XV-242F059G
		XV-24202			XV-242F059H
		XV-242F041			XV-242F059L
		XV-242F043A			XV-242F059M

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 20 (Cont'd)

System	P&ID	Valve	System	P&ID	Valve
RPV (continued)	M-2142	XV-242F059N	RXR (continued)	M-2143	XV-243F012D
		XV-242F059P			XV-243F040A
		XV-242F059R			XV-243F040B
		XV-242F059S			XV-243F040C
		XV-242F059T			XV-243F040D
		XV-242F059U			XV-243F057A
		XV-242F061			XV-243F057B
RXR	M-2143	XV-242F003A	RWCU	M-2144	XV-24411A
		XV-243F003B			XV-24411B
		XV-243F004A			XV-24411C
		XV-243F004B			XV-24411D
		XV-243F009A			XV-244F046
		XV-243F009B	RCIC	M-2149	XV-244F044A
		XV-243F009C			XV-249F044B
		XV-243F009D			XV-249F004C
		XV-243F010A			XV-249F044D
		XV-243F010B	RHR	M-2151	XV-25109A
		XV-243F010C			XV-25109B
		XV-243F010D			XV-25109C
		XV-243F011A			XV-25109D
		XV-243F011B	Core Spray	M-2152	XV-252F018A
		XV-243F011C			XV-252F018B
		XV-243F011D	HPCI	M-2155	XV-252F024A
		XV-243F012A			XV-255F024B
		XV-243F012B			XV-255F024C
		XV-243F012C			XV-255F024D

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 20 (Cont'd)

Category: C

Class: 1

Function: Containment Isolation

Impractical Test Requirement: Exercise test valve once per 92 days.

Basis for Deferment: Excess flow check valves are installed on instrument lines penetrating containment in accordance with Regulatory Guide 1.11. As such, the lines are sized and/or orificed such that off-site doses will be substantially below 10CFR100 limits in the event of a rupture. Therefore, individual leak rate testing of these valves is not required for conformance with 10CFR50, Appendix J requirements.

Functional testing of valves to verify closure can be accomplished by the process of venting the instrument side of the valve while the process side is under pressure. Such testing is required by Technical Specification 4.6.3.4 at least once per 18 months. Testing on a more frequent basis is not feasible for several reasons. Instruments serviced by these valves frequently have interlock or actuation functions that would be interfered with should testing be attempted during plant operation. Also, process liquid will be contaminated to some degree, requiring special measures to collect flow from the vented instrument side.

Alternative Testing: Functional testing with verification that flow is checked will be performed at least once per 18 months per Technical Specification 4.6.3.4.

RELIEF REQUESTS

RELIEF REQUEST NUMBER 01

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RELIEF REQUEST NUMBER 02

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RELIEF REQUEST NUMBER 03

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RELIEF REQUEST NUMBER 04

System: MSIV Leakage Control System

P&ID: M-2139

Valves: 239F010
239F011

Category: C

Class: 2

Function: Drain water out through drain line, by check valve opening; and prevent unrestricted air inflow through drain line, by check valve closure.

Impractical Test Requirement: Exercise valves once per 92 days or satisfy the alternative requirements of OMa-1988, Part 10, Paragraph 4.3.2.

Basis for Relief: These 1" ball check valves are each installed in an uninstrumented drain line, with the safety function of closing off the drain line to allow the MSIV Leakage Control System to create a vacuum in the lines upstream of the check valves. There exist no pressure nor airflow instruments in the check valve lines, nor any provision for connecting temporary instruments, nor any test connections for introducing nor monitoring airflow. Therefore, compliance with the code requirement is impractical because of design limitations.

Compliance with the alternative inspection requirement at every refueling outage is impractical because it creates the potential for spills and contamination; and because it causes increased radiation exposure, in conflict with plant ALARA goals. Because these check valves operate in a low temperature, relatively non-corrosive and chemically inactive environment of exclusively condensate-purity water and because they are stainless steel, they are not subject to deterioration from chemical attack or corrosion. Because they operate only very infrequently they are not susceptible to deterioration from service-induced causes. These mitigating factors are not taken into account by the rule of the OM standard. The proposed 6 year length of the inspection period is the same as that established by NRC Generic Letter 89-04 as an acceptable guideline for a similar program of periodic inspections of check valves.

Alternative Testing: Operability of these valves will be verified by periodic inspection, at a frequency of once each 72 months.

RELIEF REQUEST NUMBER 05

System: Nuclear Boiler

P&ID: M-2141

Valves: PSV-241F013 G,J,K,L,M,N

Category: B, C

Class: 1

Function: ADS Valve, Code Safety/Relief Valve

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Relief: The six safety relief valves assigned to the ADS system perform an essential safety function when operated by the pneumatic actuator with gas supplied through the ADS solenoid valves. Operation of these valves is not practical during power operation because this action will vent main steam to the suppression pool, inducing a transient condition and increasing the potentiality for an open failure of a safety relief valve. Also, no stroke timing is practical as these are pneumatic assisted SRVs. No direct position indication of the SRVs is provided. Although acoustic monitors attached to the valve discharge piping provide evidence of steam flow through each valve, which can be taken as indirect or secondary indication of valve position, no accurate stroke timing is possible. ADS valve stroke time could only be inferred very crudely from elapsed time between manual (non-ADS) actuation of each valve and acoustic monitor indication of steam flow or lack of steam flow in the valve discharge pipe line. Exercising during cold shutdown cannot be accomplished because of lack of steam flow (and attendant noise) provides no indirect or secondary indication of valve movement.

Alternative Testing: The ADS valves will be exercised once per 18 months in accordance with Technical Specification 4.5.1.d.2.b, which provides manual opening of each ADS valve with reactor dome pressure greater than or equal to 100 psig and observing either control valve or bypass valve response or corresponding change in measured steam flow. No stroke timing can be done.

RELIEF REQUEST NUMBER 05 (Cont'd)

Additionally, to monitor for possible degradation of each ADS SRV, actuator lift time (opening stroke time) and actuator lift distance (opening stroke distance) will be measured during each safety valve/relief valve pressure setpoint test done to satisfy safety valve testing.

RELIEF REQUEST NUMBER 06

System: Control Rod Drive

P&ID: M-2147

Valves	Category
247114-001 through 247114-185	C
247115-001 through 247115-185	C
XV-247126-001 through XV-247126-185	B
XV-247127-001 through XV-247127-185	B
247138-001 through 247138-185	C

Class: 2

Function: Control Rod Scram

Impractical Test Requirement: Exercise valves once per 92 days and measure stroke times.

Basis for Relief: These valves, located on the hydraulic control units for the 185 control rod drives, perform the active safety function of rapidly inserting the control rods into the reactor core, upon receipt of a reactor scram signal from the reactor protection system. Exercising these valves quarterly during power operations could result in the rapid insertion of one or more control rods more frequently than desired. Where testing could result in the rapid insertion of control rods, thereby causing rapid reactivity transients and wear of the control rod drive mechanisms, the control rod scram test frequency identified in the Plant Technical Specifications will be utilized as the valve testing frequency.

Normal control rod motion has been shown to be an indicator that the associated cooling water header check valve (247138 -001 through -185) moves to its safety position (closed). Normal control rod motion may not occur if this check valve were to fail in the open position. An additional positive test of the closure of this valve can be provided by venting of the cooling water header during Primary Containment Integrated Leakage Testing, conducted per Technical Specification 4.6.1.2.

RELIEF REQUEST NUMBER 06 (Cont'd)

Normal control rod motion does not serve as an indicator that any scram discharge header check valve (247114 -001 through -185) moves to its safety position (open), however. Since this check valve is moved to its open position only by scram exhaust flow, a positive test of the opening of the valve can only be provided by the periodic scram testing and control rod insertion timing specified by Technical Specification 4.1.3.2.

Verification that any charging water header check valve (247115 -001 through -185) moves to its safety position (closed), requires that the control rod drive pumps be stopped to depressurize the charging water header. This test cannot be performed during power operations because stopping the pumps would result in loss of cooling water to all control rod drive mechanisms and seal damage could result. This test cannot be performed during each cold shutdown because the control rod drive pumps supply seal water to the reactor recirculation pumps and one of the recirculation pumps might be kept running, thus continuing to need its seal water supply. The HCU accumulator pressure decay test, specified by Technical Specification 4.1.3.5.b.2, provides verification of the closure of its charging water header check valve.

The scram inlet valves (XV-247126 -001 through -185) and the scram exhaust valves (XV-247127 -001 through -185) are air operated valves that full-stroke in milliseconds and are not equipped with position indication, thereby rendering measurement of their full-stroke times impractical. Verifying that the control rod associated with each pair of these valves meets the periodic scram testing rod insertion time limits, specified by Technical Specification 4.1.3.2, is an acceptable alternate method of detecting degradation of these valves. Since these measurements of control rod insertion times are subject to the conservative limitations of Technical Specification 4.1.3.3, and because these measurements cannot be meaningfully correlated with the full-stroke times of the scram inlet and exhaust valves, trending of these scrams time measurements in any manner comparable to that of valve stroke times is both impractical and unnecessary.

These bases for relief from applicable code testing requirements for these individual control rod scram valves are intended to conform to those provided as guidance by NRC Generic Letter 89-04 (Position #7).

RELIEF REQUEST NUMBER 06 (Cont'd)

Alternative Testing: Proper functioning of the scram discharge header check valves (247114-XXX), of the scram inlet valves (XV-27126-XXX), and of the scram exhaust valves (XV-247127-XXX) will be verified by periodic scram testing and control rod insertion timing, with reactor pressure ≥950 psig, conducted per Technical Specification 4.1.3.2 and Technical Specification 4.1.3.3:

a) For all control rods prior to thermal power exceeding 40% of rated thermal power, following core alternations or after a reactor shutdown that is greater than 120 days.

b) For specifically affected individual control rods, following maintenance or modification to the control rod or control rod drive system, which could affect the scram insertion time of those specific control rods.

c) For at least 10% of the control rods, on a rotating basis, at least once per 120 days of power operation.

Proper closure of the charging water header check valves (247115-XXX) will be verified by the demonstration that each individual accumulator check valve maintains its associated accumulator pressure above the alarm set point for ≥10 minutes, with no CRD pump operating, at least once per 18 months, conducted per Technical Specification 4.1.3.5.b.2.

Proper closure of the cooling water header check valves (247138-XXX) will be verified by venting of the cooling water header during Primary Containment Integrated Leakage Testing, at least once per 30 to 50 month interval, conducted per Technical Specification 4.6.1.2.

RELIEF REQUEST NUMBER 07

System: Control Rod Drive Hydraulic

P&ID: M-2147

Valves: XV-247FO10, XV-247FOll
XV-247Fl8O, XV-247FI81

Category: B

Class: 2

Function: CRD Scram Discharge Volume venting and draining

Impractical Test Requirement: OMa-1988, Part 10, paragraph 4.2.1.9.b Corrective Action requirement that "Valves with measured stroke times which do not meet the acceptance criteria of paragraph 4.2.1.8 shall be immediately retested or declared inoperable".

Basis For Relief: These globe valves are air operated and have comparatively complex actuation logic schemes sequencing their start and stop times. P&ID M-2147 Notes #21 & 22 establish additional restraints, which are satisfied administratively, upon the stroke times and sequencing of these valves. The pneumatic actuators of these valves have their exhaust airflows metered by needle valves. Their actuation rate is extremely sensitive to the slightest changes in the positions of the needles in these needle valves, as caused by readjustment, by physical shock, or by thermal change. By readjustment of the exhaust needle valve position, these valves are maintained in compliance with the stroke time and sequencing limitations of the P&ID, which, although dissimilar from those of Article IWV-3000, provide a more relevant basis for verifying the operational readiness of these particular valves.

Stroke time measurement of these AOVs is primarily a measure of the balance of their entire actuating air supply/exhaust network; it is not a reliable measure of the physical condition of the valve under test. Position change of the common needle valves in the actuating air exhaust lines has been the primary, dominant, and only significant cause of changes in stroke times of these AOVs. Measurements of the stroke times of these AOVs are indicative mainly of needle valve position; and not of the AOV physical condition. Mechanical failure of any of these valves would cause a large and definitive increase in its stroke time, causing it to exceed its 30 second Limit Stroke Time and plant Technical Specification 4.1.3.4.a.1 limit.

RELIEF REQUEST NUMBER 07 (Cont'd)

These valves are located in a radiologically contaminated area of the plant. They have no remote position indication useable for testing; and they have no individual control mechanism (only two common pushbuttons). Consequently, exercise testing of the valves requires simultaneous entry of their radiologically contaminated area by four observers. Upon the common actuation of all four valves, simultaneous direct observation (accompanied by stopwatch timing) is made of the valve stems of all four AOVs during their closure strokes. This crude testing method of simultaneous direct observation of valve stem motion does not produce stroke timing results accurate enough to justify any concern over 25% (or 50%) rates of variation in individual stroke time measurements.

Alternative Testing: Exercise testing of the four valves is to be performed quarterly.
OMa-1988, Part 6, paragraph 4.2.1.9.a Corrective Action will be taken, with comparison of the closure stroke time measurement for each valve with the plant Technical Specification 4.1.3.4.a.1 Stroke Time Limit of 30 seconds.
OMa-1988, Part 6, paragraph 4.2.1.9.b Corrective Action will not be taken.

RELIEF REQUEST NUMBER 08

System: Core Spray

P&ID: M-2152

Valves: 252005

Category: C

Class: 2

Function: Prevent reverse flow out through suppression pool fill line, by check valve closure.

Impractical Test Requirement: Exercise valve once per 92 days or satisfy the alternative requirements of OMa-1988, Part 10, Paragraph 4.3.2.

Basis for Relief: This 3" check valve is installed in the uninstrumented suppression pool filling line, with the safety function of closing off the filling line in the extremely unlikely event that it is being used for suppression pool refilling at the moment of a LOCA occurrence. There exists no instrumentation installed in this line, nor any provision for connecting temporary instruments for monitoring either flow or pressure. Additionally, as this line is connected into the Core Spray System, it is filled with radioactively contaminated water, which introduces the risk of spreading contamination in the plant if the pipe line were breeched to attempt to test for check valve reverse flow. Therefore, compliance with the code requirement is impractical because of design limitations.

Compliance with the alternative inspection requirement at every refueling outage is impractical because it creates the potential for spills and contamination; and because it causes increased radiation exposure, in conflict with plant ALARA goals. Because these check valves operate in a low temperature, relatively non-corrosive and chemically inactive environment of exclusively condensate-purity water, they are not subject to deterioration from chemical attack or corrosion. Because they operate only very infrequently they are not susceptible to deterioration from service-induced causes. These mitigating factors are not taken into account by the rule of the OM standard. Using industry guidance, the Susquehanna Check Valve Preventative Maintenance Improvement Project (PMIP) recommended an inspection period of 12 years based upon review of the valves' design, installation and service information, their importance to plant safety, and their maintenance/failure history.

RELIEF REQUEST NUMBER 08 (Cont'd.)

The proposed 6 year length of the inspection period is the same as that established by NRC Generic Letter 89-04 as an acceptable guideline for a similar program of periodic inspections of check valves.

Alternative Testing: Operability of this valve will be verified by periodic inspection, at a frequency of once each 72 months.

RELIEF REQUEST NUMBER 09

System: Fuel Pool Cooling and Clean-Up

P&ID: M-2153

Valves: 253071 A,B

Category: C

Class: 3

Function: Admit flow to fuel storage pool.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Relief: In an alternative flowpath to the fuel storage pool, exercising of these valves utilizing flow can only be accomplished utilizing ESW or RHR water. Use of ESW would introduce "raw" water from the ESSW spray pond, undesirable for chemistry and fuel integrity considerations. While use of the RHR flowpath is possible, the difficulty of operating the RHR system in an abnormal lineup for supplying the fuel pool creates a dynamic control situation that is best minimized.

Alternative Testing: Verify valve operability by a pneumatic open flow path test during periodic pressure test. A pneumatic open flow path test (SE-235-301) is performed once per Inspection Period (as specified by ASME Code Section XI paragraph IWD-2400). Per Relief Request 20, valves will be periodically inspected in lieu of testing.

RELIEF REQUEST NUMBER 10

System: HPCI

P&ID M-2156, Sheet 1

Valves: FV-25612

Category: B

Class: 2

Function: Opens to admit steam to HPCI turbine, closes to isolate steam in the event of a turbine trip.

Impractical Test Requirements: Stroke time valves when exercised, once per 92 days.

Basis for Relief: The HPCI Turbine Stop Valve, FV-25612, has a design closure stroke time of 0.5 seconds. This rapid closure is accomplished by spring force. As a rapid-acting valve, closure of this valve cannot be timed accurately nor trended from test-to-test. In contrast, opening is accomplished hydraulically by oil pressure working against spring force. Opening takes a much longer time than closing, but the length of time can vary greatly, depending on HPCI lube oil flow and pressure variations. The turbine stop valve has no independent manual control, but rather is controlled only by HPCI turbine oil pressure. Repetitious starts and stops of the HPCI turbine and its lube oil pumps to support attempts to precisely time stop valve movement are detrimental to the machine. The turbine stop valve is a skid-mounted component of the HPCI turbine, and structurally integrated with the turbine.

Alternative Testing: Valve will be tested functionally each time the HPCI turbine is tested (quarterly). No stroke timing or trending will be performed. In addition, response time testing for the HPCI system will be performed in accordance with Technical Specifications once per 18 months.

RELIEF REQUEST NUMBER 11

System: High Pressure Coolant Injection

P&ID: M-2156, Sheet 1

Pumps: 2P204 and 2P209 (combination)

Class: 2

Impractical Test Requirement: OMa-1988, Part 6, paragraph 5.6, requirement for duration of test to be at least 2 minutes, with the pump run under conditions as stable as the system permits.

Basis For Relief: These pumps are driven by a steam turbine which exhausts steam into the suppression pool, heating it toward its Technical Specification limit of 105°F. This is a severe limitation on test duration. Increasing suppression pool temperature toward its 105°F limit, while within limits, does reduce plant safety margin in the event of an accident occurring during or after a test. Frequent test repetition is not desirable due to the strong transient nature of a HPCI quick start. Such quick starts are recommended by INPO and have been adopted as PP&L's test method. Pump speed is not directly controllable, but can only be achieved through coordinated manipulation of the pump flow controller and the test system throttling valve. Test results are extremely sensitive to variations in pump speed, from all sources. These factors make this test uniquely time-dependent.

Furthermore, the HPCI Pump quarterly surveillance test procedure is structured to first demonstrate satisfaction of Technical Specification 4.5.1.b.3 by running he pump at its rated flow rate and discharge pressure conditions, which create essentially the same test conditions as those for inservice testing. This prior technical specification test performance has the effect of providing several minutes of pump warmup time at rated conditions before the inservice test.

Alternative Testing: The pumps shall be run for at least one minute under conditions as stable as the system permits. At the end of this time at least one measurement or observation of each of the quantities specified shall be made and recorded.

RELIEF REQUEST NUMBER 12

System: High Pressure Coolant Injection

P&ID: M-256, Sheet 2

Pump: 2P213, Auxiliary Oil Pump

Class: Non-Code: Safety Function

Function: Provide lubricating oil throughout the machine, including hydraulic power to the HPCI Turbine Stop valve and control valve, for their initial opening.

Impractical Test Requirement: Pressure, flow rate, and vibration... shall be determined and compared with corresponding reference valves... (OMa-1988, Part 6, paragraph 5.2.d).

Basis For Relief: HPCI Auxiliary Oil Pump 2P213 is "skid-mounted" and is installed in a 1 1/4" non-Code lube oil supply line, which is provided with (pump discharge) pressure indication, but no flow rate indication. Oil flowrate through the discharge line may vary with oil temperature. A discharge line relief valve recirculates unneeded oil back to the reservoir when system hydraulic resistance is high (at low demand), thus masking pump output flow. With the existing equipment, only 2 of the 3 test parameters, discharge line oil pressure (downstream of the relief valve) and pump vibration can be measured.

Alternative Testing: The Auxiliary Oil Pump will be tested quarterly by measuring discharge line oil pressure and pump vibration.

RELIEF REQUEST NUMBER 13

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RELIEF REQUEST NUMBER 14

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RELIEF REQUEST NUMBER 15

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RELIEF REQUEST NUMBER 16

System:	RCIC	HPCI
P&ID:	M-2149	M-2155
Valves:	249F030	255F045
Category:	C	
Class:	2	

Function: Backflow prevention in pump suction line from suppression pool.

Impractical Test Requirement: Exercise valve once per 92 days.

Basis for Relief: To verify proper opening of these valves, it is necessary to initiate RCIC or HPCI flow while taking suction from the suppression pool. Since the water quality in the suppression pool is not maintained at reactor coolant standards, it is not advisable to initiate this flow at any time during normal operations. The resulting contamination of the RCIC or HPCI system from such flow testing would affect the condensate storage tank purity and ultimately affect the chemistry control of the reactor coolant system. There exists no other practical method of verifying proper valve operation.

Alternate Testing: Verify operability by inspection during valve disassembly. Per Relief Request 20, valves will be periodically inspected in lieu of testing.

RELIEF REQUEST NUMBER 17

System:	RCIC	HPCI
P&ID:	M-2149	M-2155
Valves:	249F011	255F019
Category:	C	
Class:	2	

Function: Backflow prevention in pump suction line from condensate storage tank.

Impractical Test Requirement: Exercise valves once per 92 days or satisfy the alternative requirements of OMa-1988, Part 10, Paragraph 4.3.2.

Basis for Relief: These check valves in the RCIC and HPCI pump suction lines are not installed in a configuration permitting positive verification of valve closure. As stated in Relief Request Number 16, alignment of the RCIC or HPCI pump to the suppression pool is not desirable. Attempting to verify closure during leak rate testing (of RCIC valve 249F030 or HPCI valve 255F045) will not provide positive verification, since there is no appropriate pressure instrumentation provided on the CST side of 255F019, and level changes in the CST would not be readily detected due to the large tank volume.

Compliance with the alternative inspection requirement at every refueling outage is impractical because it creates the potential for spills and contamination; and because it causes increased radiation exposure, in conflict with plant ALARA goals. Because these check valves operate in a low temperature, relatively non-corrosive and chemically inactive environment of exclusively condensate-purity water, they are not subject to deterioration from chemical attack or corrosion. Because they operate only very infrequently they are not susceptible to deterioration from service-induced causes. These mitigating factors are not taken into account by the rule of the OM standard. Using industry guidance, the Susquehanna Check Valve Preventative Maintenance Improvement Project (PMIP) recommended an inspection period of 12 years based upon review of the valves' design, installation and service information, their importance to plant safety, and their maintenance/failure history.

RELIEF REQUEST NUMBER 17 (Cont'd.)

The proposed 6 year length of the inspection period is the same as that established by NRC Generic Letter 89-04 as an acceptable guideline for a similar program of periodic inspections of check valves.

Alternate Testing: Verify operability by inspection during valve disassembly. The valve will be disassembled at least once every other refueling outage on an alternating basis.

RELIEF REQUEST NUMBER 18

System:	RCIC	HPCI
P&ID:	M-2149	M-2155
Valves:	249016	255013
Category:	C	
Class:	2	

Function: Prevent reverse flow out through keepfill line.

Impractical Test Requirement: Exercise valve once per 92 days or satisfy the alternative requirements of OMa-1988, Part 10, Paragraph 4.3.2.

Basis for Relief: These 2" check valves, located in keepfill lines for the RCIC and HPCI Systems provide Condensate Transfer System water flow into their respective headers, while preventing flow of process water in the reverse direction during RCIC/HPCI System operation. Each of these check valves are the second (upstream) check valve in series. There is only a single test connection, installed between the two tandem check valves in each line. Thus, the downstream check valve in each line can be and is tested, but there is no provision for testing of the upstream check valve. Compliance with the Code requirement is impractical because of design limitations. The stainless steel construction of each check valve and the series configuration of each pair of check valves reduce the probability of failure to restrict reverse flow through any keepfill line. The relatively small size of each keep fill line minimizes the impact of any such failure. The combination of these mitigating factors warrant reduction in inspection frequency.

Compliance with the alternative inspection requirement at every refueling outage is impractical because it creates the potential for spills and contamination; and because it causes increased radiation exposure, in conflict with plant ALARA goals. Because these check valves operate in a low temperature, relatively non-corrosive and chemically inactive environment of exclusively condensate-purity water, they are not subject to deterioration from chemical attack or corrosion. Because they operate only very infrequently they are not susceptible to deterioration from service - induced causes. These mitigating factors are not taken into account by the rule of the OM standard. Using industry guidance, the

RELIEF REQUEST NUMBER 18 (Cont'd.)

Susquehanna Check Valve Preventative Maintenance Improvement Project (PMIP) recommended an inspection period of 12 years based upon review of the valves' design, installation and service information, their importance to plant safety, and their maintenance/failure history. The proposed 6 year length of the inspection period is the same as that established by NRC Generic Letter 89-04 as an acceptable guideline for a similar program of periodic inspections of check valves.

Alternate Testing: Operability of this valve will be verified by periodic inspection, at a frequency of once each 72 months.

RELIEF REQUEST NUMBER 19

System	P&ID	Valve	Category	Class	Function
ESW	M-2111	211132	C	3	ESG & Load Center Rooms cooling
ESW	M-2111	211133	C	3	ESG & Load Center Rooms cooling
ESW	M-2111	211134	C	3	ESG & Load Center Rooms cooling
ESW	M-2111	211135	C	3	ESG & Load Center Rooms cooling
RCIC	M-2149	249F063	C	2	Turbine exh steam line vac brkr
RCIC	M-2149	249F064	C	2	Turbine exh steam line vac brkr
RHR	M-2151	251F046 A/B/C/D	C	2	RHR pump minimum flow line
LPCS	M-2152	252F036 A/B/C/D	C	2	CS pump minimum flow line
HPCI	M-2155	255F076	C	2	Turbine exh steam line vac brkr
HPCI	M-2155	255F077	C	2	Turbine exh steam line vac brkr

Impractical Test Requirement: OMa-1988, Part 10, paragraph 4.3.2.4.c requirement that, as an alternative to the (exercise) testing ..., disassembly every refueling outage to verify operability of check valves may be used.

Basis For Relief: In recognition that establishing design accident flow through these valves for testing could result in degradation or damage to major plant equipment, NRC Generic Letter 89-04 Position 2 establishes that disassembly and inspection of these check valves may be used as a positive means of determining that a valve's disk will "full-stroke" open ... , as permitted by ASME Code. If possible, partial valve stroking quarterly or during cold shutdowns or after reassembly must be performed, additionally. Due to the scope of these inspections, the personnel hazards involved, and system operating restrictions, NRC Generic Letter 89-04 Position 2 establishes that valve disassembly and inspection may be performed during reactor refueling outages. As it is burdensome to disassemble and inspect all of the subject valves each refueling outage, NRC Generic Letter 89-04 Position 2 establishes that a sample inspection plan for groups of up to four identical valves in similar applications may be employed, within the NRC guidelines specified within Position 2.

RELIEF REQUEST NUMBER 19 (Cont'd.)

Alternative Testing: Perform partial valve stroke exercise testing at quarterly testing frequency, at cold shutdown testing frequency, or at other frequency, where specified in separate Refueling Outage Test Justifications or Relief Requests, specific to each check valve. Establish and employ a sample disassembly and inspection plan for groups of up to four identical valves in similar applications. Disassemble, inspect, verify structural soundness of internal components, and manually exercise the disk through its full stroke for one different valve in each group at each successive refueling outage (or 18 month $\pm$ 3 month period for common plant valves and the ESW valves), until the entire group has been inspected.

As an alternative to inspection, optionally perform full valve stroke exercise testing, utilizing a non-intrusive diagnostic test system, employing externally generated magnetic flux monitoring, acoustic emission monitoring and/or ultrasonic techniques, on the same schedule; i.e., diagnostic test one different valve in each group at each successive refueling outage (or 18 month $\pm$ 3 month period for common plant valves), until the entire group has been diagnostic-tested or inspected.

RELIEF REQUEST NUMBER 20

System	P&ID	Valve	Category	Class	Function
RCIC	M-2149	249F021	C	2	RCIC pump minimum flow line
RCIC	M-2149	249F030	C	2	RCIC supp pool suction line
FPC&C	M-2153	253071 A/B	C	3	FPC&C isolation from ESW system
HPCI	M-2155	255F045	C	2	HPCI supp pool suction line
HPCI	M-2155	255F046	C	2	HPCI pump minimum flow line
HPCI	M-2156	256F048	C	2	HPCI lube oil cooler return line
HPCI	M-2156	256F057	C	2	HPCI lube oil outlet line

Impractical Test Requirement: OMa-1988, Part 10, paragraph 4.3.2.4.c requirement that, as an alternative to the (exercise) testing ..., disassembly every refueling outage to verify operability of check valves may be used.

Basis For Relief: In recognition that establishing design accident flow through these valves for testing could result in degradation or damage to major plant equipment, NRC Generic Letter 89-04 Position 2 establishes that disassembly and inspection of these check valves may be used as a positive means of determining that a valve's disk will "full-stroke" open ... , as permitted by ASME Code. If possible, partial valve stroking quarterly or during cold shutdowns or after reassembly must be performed, additionally. Due to the scope of these inspections, the personnel hazards involved, and system operating restrictions, NRC Generic Letter 89-04 Position 2 establishes that valve disassembly and inspection may be performed during reactor refueling outages. As it is burdensome to disassemble and inspect all of the subject valves each refueling outage, NRC Generic Letter 89-04 Position 2 establishes that a sample inspection plan for groups of up to four identical valves in similar applications may be employed, within the NRC guidelines specified within Position 2. As the population of identical valves, among those listed above, is extremely small, groups of up to four identical valves in similar applications in both units will be created for sampling.

RELIEF REQUEST NUMBER 20 (Cont'd)

Alternative Testing: Perform partial valve stroke exercise testing at quarterly testing frequency, at cold shutdown testing frequency, or at other frequency, where specified in separate Refueling Outage Test Justifications or Relief Requests, specific to each check valve. Establish and employ a sample disassembly and inspection plan for groups of up to four identical valves, shared among both units, in similar applications. Disassemble, inspect, verify structural soundness of internal components, and manually exercise the disk through its full stroke for one different valve in each group at every "pair" of refueling outages, alternating between the two units, until the entire group has been inspected. The Fuel Pool Cooling and Cleanup check valves, not normally tested during refueling outages, are tested on a 72 month frequency for each valve.

As an alternative to inspection, optionally perform full valve stroke exercise testing, utilizing a non-intrusive diagnostic test system, employing externally generated magnetic flux monitoring, acoustic emission monitoring and/or ultrasonic techniques, on the same schedule; i.e., diagnostic test one different valve in each group at every "pair" of refueling outages, alternating between the two units until the entire group has been diagnostic-tested or inspected.

RELIEF REQUEST NUMBER 21

System	P&ID	Valves	Category	Class	Function
ESW/SW	M-2109	HV-20943A2/B2	B	3	ESW System isolation
ESW/SW	M-2110	HV-21024A1/A2/A3/A4	B	3	ESW System isolation
ESW/SW	M-2111	HV-21143A/B	B	3	ESW System isolation
CAC	M-2157	HV-25703, HV-25704, HV-25705, HV-25711, HV-25713, HV-25714, HV-25721, HV-25722, HV-25723, HV-25724, HV-25725	A	2	Containment isolation
LRW	M-2161	HV-26108A1/A2 HV-26116A1/A2	A	2	Containment isolation
RBCW	M-2187	HV-28781A1/A2/B1/B2 HV-28782A1/A2/B1/B2 HV-28791A1/A2/B1/B2 HV-28792A1/A2/B1/B2	A	2	Containment isolation

Impractical Test Requirement: OMa-1988 Part 10 paragraph 4.2.1.9(b) requirement that a valve not meeting the stroke time reference value acceptance criteria of paragraph 4.2.1.8 shall be declared inoperable if the paragraph 4.2.1.9(b) conditions are not met for immediate retest; and, if paragraph 4.2.18 acceptance criteria re again not met during retest, that a conclusive data analysis be performed within 96 hours that verifies that the new stroke time represents acceptable valve operation.

Basis for Relief: Thirty-one of the 39 Air Operated Valves (AOV) that are the subject of this Relief Request are containment isolation valves in lines of the Reactor Building Chilled Water System (supplying drywell cooling), of the Liquid Radwaste System (returning from the drywell equipment drain tank), and of the Containment Atmosphere Control System; all with the safety function of closing to provide containment isolation. In the experience of this plant, these containment isolation valves have proven to be extremely dependable. No evidence of physical deterioration of any of the AOVs has ever been found to accompany their variations in stroke time.

RELIEF REQUEST NUMBER 21 (Cont'd)

As containment isolation valves, these AOVs are provided with Maximum Isolation Times by plant Technical Specifications (T.S. 4.6.3.3). These Maximum Isolation Times have been established as the Limiting Values of Full Stroke Time (per OMa-1988 Part 10, paragraph 4.2.1.4.a) and have served well in this application during the first 10 year inservice testing interval. As provided by OMa-1988 Part 10 paragraph 4.2.1.9(a), use of these Limiting Values of Full Stroke Time will continue, unchanged, as the criteria for each valve's continued operability. These criteria continue to provide an acceptable level of quality and safety.

Imposition of the additional, more restrictive OMa-1988 Part 10 paragraph 4.2.1.8 acceptance criteria, which are of an arbitrary nature and not valve-specific, as determinants of operability, could have the effect of subjecting the plant to unnecessary transients because of the plant shutdowns that could be required to allow primary containment entry for either investigatory inspection or repair of any of the eight AOVs that are located inside containment. For valves outside containment the requirements of OMa-1988 paragraph 4.2.1.9(b) could necessitate removal of safety systems from service for valve investigatory inspection or repair during power operation, unnecessarily.

Other undesirable effects of attempting to determine valve operability by the arbitrary acceptance criteria of OMa-1988 Part 10 paragraph 4.2.1.8 are that potentially unwarranted and unproductive maintenance investigatory inspections would cause increased radiation exposure to plant personnel - contradictory to plant ALARA goals; and would increase the potential for spills and spread of contamination, due to breaching of contaminated systems to inspect valves that Susquehanna experience has demonstrated will likely show no material degradation.

An acceptable level of quality and safety will not only be maintained by continued use of the Limiting Values of Full Stroke Time as determinants of operability, but also by commitment to the OMa-1988 Part 10 paragraph 4.2.1.9(b) requirement to analyze deviations from the stroke time reference value acceptance criteria ranges of paragraph 4.2.1.8. Additionally, for valves for which a conclusive analysis cannot be performed without removal of the valve from service for investigatory inspection, enhanced condition monitoring will be as per the proposed Alternative Testing.

RELIEF REQUEST NUMBER 21 (Cont'd)

Alternative Testing: Valves not meeting the stroke time reference value acceptance criteria ranges (paragraph 4.2.1.8), that are immediately retested per OMa-1988 Part 10 paragraph 4.2.1.9(b) with the second set of stroke time measurement data also not meeting the acceptance criteria ranges, shall have said data analyzed within 96 hours to verify that the new stroke time data represents acceptable valve operation; or the valve test frequency shall be increased to once each month until corrective action has been taken, at which time the original test frequency shall be resumed.

RELIEF REQUEST NUMBER 22

System: Emergency Switchgear Room Cooling Subsystem

P&ID M-2172

Valves: HV-27203A, HV-27203B

Category: B

Class: 3

Function: Control valve, controlling pressure in condenser of air refrigerating unit, through control of cooling water flowrate.

Impractical Test Requirements: Exercise valves once per 92 days.

Basis for Relief: Control valves HV-27203A and B are installed in the Emergency Service Water supply line to each Direct Expansion Unit Condenser. Each throttles flow through its respective line to maintain refrigerant pressure in the unit's condenser within an operating range of values. Each valve moves to its full open position only once each 18 month period, when its electrical control is defeated during performance of Emergency Service Water System flow balancing.

Alternative Testing: As part of each quarterly Emergency Switchgear Room Cooling Subsystem valve exercise test, monitor the direct expansion unit refrigerant pressure in the condenser and verify that pressures within the specified range are maintained. In conjunction with this testing perform part-stroke exercising of valves HV-27203A and B. In conjunction with Unit 2 Emergency Switchgear Room Cooling Subsystem flow balancing, conducted at least once each 18 month period, perform opening exercise tests of valves HV-27203A and B to their full open positions. No stroke timing can be done.