SUSQUEHANNA STEAM ELECTRIC STATION

UNIT 1

INSERVICE INSPECTION PROGRAM PLAN

FOR

PUMP AND VALVE OPERATIONAL TESTING

Rev.	Description	Prepared by:	Approved by:	Date
7	Compliance with NRC Generic Letter 89-04	Signatures on File		
8	Responses to NRC Comments	Signatures on File		
9	Addition of Water Level Backfill Valves	Signatures on File		
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SUSQUEHANNA STEAM ELECTRIC STATION
UNIT 1
PUMP AND VALVE INSERVICE INSPECTION
TESTING PROGRAM

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SUSQUEHANNA STEAM ELECTRIC STATION UNIT 1

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 as 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

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-1436 for Unit 1 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-102, 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-102, 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 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-1__	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 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 1000 ± 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			
1P202A	Residual Heat Removal-A	M-151 SH. 1	G-4	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P202B	Residual Heat Removal-B	M-151 SH. 3	G-6	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P202C	Residual Heat Removal-C	M-151 SH. 1	H-3	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P202D	Residual Heat Removal-D	M-151 SH. 3	H-7	2	20	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P203	Reactor Core Isolation Cooling	M-150	D-5	2	6	CF	H	ST	X	X	X	--	X	Q		Bypass loop.
1P204 and 1P209	High Pressure Coolant Injection Main & Booster	M-156 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			
1P206A	Core Spray-A	M-152	G-5	2	12	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P206B	Core Spray-B	M-152	G-7	2	12	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P206C	Core Spray-C	M-152	G-6	2	12	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P206D	Core Spray-D	M-152	G-8	2	12	CF	V	EM	--	X	X	--	X	Q		Bypass loop, bearings in main flow path lubricated by pumped liquid.
1P208A	Standby Liquid Control-A	M-148	D-5	2	1½	PD	H	EM	--	X	--	X	X	Q		Bypass loop.
1P208B	Standby Liquid Control-B	M-148	F-5	2	1½	PD	H	EM	--	X	--	X	X	Q		Bypass loop.
1P213	HPCI Auxiliary Oil Pump	M-156 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			
OP504A	Emergency Service Water-A	M-111 SH.1	G-2	3	16	CF	V	EM	--	X	X	--	X	Q		Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.
OP504B	Emergency Service Water-B	M-111 SH. 1	G-6	3	16	CF	V	EM	--	X	X	--	X	Q		Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.
OP504C	Emergency Service Water-C	M-111 SH. 1	G-4	3	16	CF	V	EM	--	X	X	--	X	Q		Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.
OP504D	Emergency Service Water-D	M-111 SH. 1	G-8	3	16	CF	V	EM	--	X	X	--	X	Q		Bearings in main flow path lubricated by pumped liquid. Inlet pressure derived from spray pond level.
1P506A	RHR Service Water-A	M-112 SH. 1	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.

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			
1P506B	RHR Service Water-B	M-112 SH. 1	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.
OP162A	C.S. Chilled Water Loop Circulation-A	M-186 SH. 1	F-6	S	4	CF	H	EM	–	X	–	–	X	Q	RR15	
OP162B	C.S. Chilled Water Loop Circulation-B	M-186 SH. 2	F-6	S	4	CF	H	EM	–	X	–	–	X	Q	RR15	
OP171A	Emergency Condenser Water Circulation-A	M-186 SH. 1	D-4	3	4	CF	H	EM	–	X	–	–	X	Q	RR15	
OP171B	Emergency Condenser Water Circulation-B	M-186 SH. 2	D-4	3	4	CF	H	EM	–	X	–	–	X	Q	RR15	

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			
OP514A	Diesel Fuel Oil Transfer Pump A	M-120 SH. 1	B-4	3	¾	CF	H	EM	--	--	--	--	--	M	RR03	Monthly test per plant Technical Specifications
OP514B	Diesel Fuel Oil Transfer Pump B	M-120 SH. 1	D-4	3	¾	CF	H	EM	--	--	--	--	--	M	RR03	Monthly test per plant Technical Specifications
OP514C	Diesel Fuel Oil Transfer Pump C	M-120 SH. 1	F-4	3	¾	CF	H	EM	--	--	--	--	--	M	RR03	Monthly test per plant Technical Specifications
OP514D	Diesel Fuel Oil Transfer Pump D	M-120 SH. 1	H-4	3	¾	CF	H	EM	--	--	--	--	--	M	RR03	Monthly test per plant Technical Specifications
OP514E	Diesel Fuel Oil Transfer Pump E	M-120 SH. 2	G-5	3	1 ½	CF	H	EM	--	--	--	--	--	M	RR03	Monthly test per plant Technical Specifications

VALVE TABLES

SERVICE WATER M-109 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-10943A2	C-8	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	
HV-10943B2	E-8	3	B	A	4	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	

SERVICE WATER M-110

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-11024A1	B-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	
HV-11024A2	A-6	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	
HV-11024B1	C-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	
HV-11024B2	C-5	3	B	A	10	BF	AO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- RR21 --	

EMERGENCY SERVICE WATER M-111 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
011001	G-3	3	C	A	18	CK	SA	--	O/C	FS	FS	Q	--	RR01	
011002	G-3	3	C	A	18	CK	SA	--	O/C	FS	FS	Q	--	RR01	
011003	G-6	3	C	A	18	CK	SA	--	O/C	FS	FS	Q	--	RR01	
011004	G-7	3	C	A	18	CK	SA	--	O/C	FS	FS	Q	--	RR01	
011033	C-1	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011034	C-1	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011035	C-4	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011036	C-4	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011037	C-6	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	

EMERGENCY SERVICE WATER M-111 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
011038	C-6	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011039	C-8	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
011040	C-9	3	C	A	8	CK	SA	--	O/C	FS FS	PS FS	Q SD	-- --	RR02 RR19	
TV-01124A	C-2	3	B	A	3	GB	HO	--	O	FS FT	FS FT	Q Q	-- --	-- --	
TV-01124B	C-7	3	B	A	3	GB	HO	--	O	FS FT	FS FT	Q Q	-- --	-- --	
TV-01124C	C-5	3	B	A	3	GB	HO	--	O	FS FT	FS FT	Q Q	-- --	-- --	
TV-01124D	C-9	3	B	A	3	GB	HO	--	O	FS FT	FS FT	Q Q	-- --	-- --	

EMERGENCY SERVICE WATER M-111 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
111144	A-8	3	C	A	8	CK	SA	–	O	FS FS	PS FS	Q RF	RJ17 RJ17	– –	Open Test Only.
111145	A-1	3	C	A	8	CK	SA	–	O	FS FS	PS FS	Q RF	RJ17 RJ17	– –	Open Test Only.
HV-11143A	A-2	3	B	A	4	BF.	AO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	
HV-11143B	A-6	3	B	A	4	BF	AO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– RR21 –	

EMERGENCY SERVICE WATER M-111 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
011513	C-3	3	C	A	10	CK	SA	--	O/C	FS	PS	Q	--	RR02 RR19	
011514	C-4	3	C	A	10	CK	SA	--	O/C	FS	PS	Q	--	RR02 RR19	
HV-01110E	B-3	3	B	A	10	BF	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	Closure Test Only.
HV-01112E	B-4	3	B	A	10	BF	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	Closure Test Only.
HV-01120E	B-7	3	B	A	10	BF	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	Closure Test Only.
HV-01122E	B-6	3	B	A	10	BF	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	Closure Test Only.
PSV-01126E	G-8	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

EMERGENCY SERVICE WATER M-111 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
TV-01124E	F-8	3	B	A	6	GB	HO	–	O	FS FT	FS FT	Q Q	– –	– –	

RHR SERVICE WATER M-112 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
112001	C-2	3	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
112003	G-2	3	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
HV-11210A	C-5	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-11210B	G-5	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-11215A	C-8	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-11215B	G-8	3	B	A	20	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-112F073A	A-3	3	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

RHR SERVICE WATER M-112 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-112F073B	E-5	3	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-112F074A	A-5	3	B	A	1	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– –	Rapid Acting Valve.
HV-112F074B	E-5	3	B	A	1	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– –	Rapid Acting Valve.
HV-112F075A	A-5	2	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-112F075B	E-5	2	B	A	6	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
PSV-11212A	C-7	3	C	A	4	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-11212B	G-7	3	C	A	4	RV	SA	–	O/C	RV	RV	RV	–	–	

RHR SERVICE WATER M-112 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-11213A	C-7	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-11213B	G-7	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	

RHR SERVICE WATER M-112 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-01201A1	D-4	3	B	A	3	BA	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-01201A2	D-3	3	B	A	3	BA	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-01201B1	D-7	3	B	A	3	BA	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-01201B2	D-8	3	B	A	3	BA	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-01222A	B-6	3	B	A	36	BF	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

RHR SERVICE WATER M-112 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-01222B	A-9	3	B	A	36	BF	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-01224A1	B-5	3	B	A	30	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-01224A2	B-3	3	B	A	24	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-01224B1	A-7	3	B	A	30	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-01224B2	A-9	3	B	A	24	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

REACTOR BUILDING CLOSED COOLING WATER M-113

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-11313	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-11314	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-11345	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-11346	C-3	2	A	A	4	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ01 CJ01 – –	– – – –	

DIESEL OIL STORAGE AND TRANSFER M-120 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
020007	B-4	3	C	A	2	CK	SA	–	O	FS	FS	M	–	–	
020009	D-4	3	C	A	2	CK	SA	–	O	FS	FS	M	–	–	
020012	E-4	3	C	A	2	CK	SA	–	O	FS	FS	M	–	–	
020015	G-4	3	C	A	2	CK	SA	–	O	FS	FS	M	–	–	

DIESEL OIL STORAGE AND TRANSFER M-120 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
020300	F-5	3	C	A	2	CK	SA	--	O	FS	FS	M	--	--	

CONTAINMENT INSTRUMENT GAS M-126 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
126018	A-6	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJ01	--	Closure test only.
126029	C-5	2	C	A	1	CK	SA	--	C	FS	FS	RF	RJO1	--	Closure test only.
126072	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.
126074	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.
126152	B-8	2	A,C	A	1	CK	SA	--	O/C	FS LJ	FS LJ	RF RF	RJ02 --	-- --	Verify operation during leak test.
126154	A-8	2	A,C	A	1	CK	SA	--	O/C	FS LJ	FS LJ	RF RF	RJ02 --	-- --	Verify operation during leak test.
126164	H-6	2	A,C	A	1	CK	SA	--	C	FS LJ	FS LJ	RF RF	RJO2 --	-- --	Closure test only, verify operation during leak test.
PCV-12643	B-6	3	C	A	1	GB	SA	--	T	--	--	--	--	--	No testing required.
PSV-12643	B-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

CONTAINMENT INSTRUMENT GAS M-126 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-12644	B-5	3	C	A	3/4	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-12646	C-4	3	C	A	3/4	RV	SA	--	O/C	RV	RV	RV	--	--	
PCV-12648	D-5	3	C	A	1	GB	SA	--	T	--	--	--	--	--	No testing required.
PSV-12648	C-5	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-12660	F-5	S	C	A	3/8	RV	SA	--	O/C	RV	RV	RV	--	--	
SV-12643	B-6	3	B	A	1	GB	SO	X	O	FS ST PI	FS ST PI	Q Q RF	-- -- RJ19	-- -- --	Rapid acting valve.
SV-12644	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-126 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-12648	D-4	3	B	A	1	GB	SO	X	O	FS ST PI	FS ST PI	Q Q RF	– – RJ19	– – –	Rapid acting valve.
SV-12649	C-6	2	B	A	1	GB	SO	X	C	FS ST PI	FS ST PI	Q Q RF	– – RJ19	– – –	Rapid acting valve.
SV-12651	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-12654A	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-126 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-12654B	B-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-12661	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.
SV-12671	H-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 INSTRUMENT GAS M-126 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-12603	D-9	2	A	A	2	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
SV-12605	D-8	2	A	A	2	GB	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q RF 2Y	– – RJ19 –	– – – –	Rapid acting valve.

EMERGENCY DIESEL GENERATOR M-134 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
034067A	B-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ03	—	
034067B	B-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ03	—	
034067C	B-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO3	—	
034067D	B-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO3	—	
034075A	F-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO3	—	
034075B	F-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO3	—	
034075C	F-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO3	—	
034075D	F-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ03	—	
PSV-03434A1	A-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434A2	E-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434B1	A-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434B2	E-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	

EMERGENCY DIESEL GENERATOR M-134 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
PSV-03434C1	A-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434C2	E-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434D1	A-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	
PSV-03434D2	E-5	3	C	A	1	RV	SA	–	O/C	RV	RV	RV	—	—	

EMERGENCY DIESEL GENERATOR M-134 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
034153E1	C-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJO3	—	
034153E2	E-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJO3	—	
PSV-03434E1	C-4	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	—	—	
PSV-03434E2	D-4	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	—	—	
PSV-03434E3	E-4	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	—	—	
PSV-03434E4	F-4	3	C	A	1	RV	SA	--	O/C	RV	RV	RV	—	—	

MSIV LEAKAGE CONTROL SYSTEM M-139

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
139F010	E-6	2	C	A	1	CK	SA	--	O/C	FS	--	O	--	RR04	Periodic inspection.
139F011	F-7	2	C	A	1	CK	SA	--	O/C	FS	--	O	--	RR04	Periodic inspection.
HV-139F001B	D-3	1	A	A	2	GT	MO	X	O/C	FS ST PT LJ	FS ST PI LJ	CS CS 2Y 2Y	CJ04 CJ04 -- --	-- -- -- --	
HV-139F001F	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-139F001K	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-139 (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-139F001P	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-139F002B	E-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-139F002F	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-139F002K	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ04 CJ04 –	– – –	
HV-139F002P	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-139 (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-139F003B	E-5	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-139F003F	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-139F003K	G-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-139F003P	H-3	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-139F006	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-139 (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-139F007	E-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 --	-- -- --	
HV-139F008	D-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 --	-- -- --	
HV-139F009	D-8	2	B	A	2	GT	MO	X	O/C	FS ST PI	FS ST PI	CS CS 2Y	CJ05 CJ05 --	-- -- --	
XV-13910B	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-13910F	F-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-13910K	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

MSIV LEAKAGE CONTROL SYSTEM M-139 (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-13910P	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

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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
141F024A	A-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJO5	–	Closure test only.
141F024B	A-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only..
141F024C	A-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F024D	A-5	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F029A	A-7	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F029B	A-7	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F029C	A-7	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F029D	A-7	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ05	–	Closure test only.
141F036A	B-4	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ06	–	Closure test only.
141F036B	B-4	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ06	–	Closure test only.
141F036C	B-4	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ06	–	Closure test only.
141F036D	B-4	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ06	–	Closure test only.

NUCLEAR BOILER M-141 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
141F036E	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036F	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036G	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036H	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036J	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036K	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036L	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJO6	--	Closure test only.
141F036M	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036N	D-3	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036P	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.
141F036R	B-4	3	C	A	1	CK	SA	--	C	FS	FS	RF	RJ06	--	Closure test only.

NUCLEAR BOILER M-141 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
141F036S	B-4	3	C	A	1	CK	SA	–	C	FS	FS	RF	RJ06	–	Closure test only.
141F040G	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
141F040J	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
141F040K	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
141F040L	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
141F040M	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
141F040N	D-4	3	C	A	1	CK	SA	–	O/C	FS	FS	RF	RJ06	–	
HV-141F016	E-6	1	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-141F019	E-6	1	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-141F020	E-7	2	B	A	3	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-141F022A	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-141F022B	F-5	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-141 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-141F022C	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-141F022D	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-141F028A	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-141F028B	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-141 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-141F028C	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-141F028D	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-14137A	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-14137B	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-14137C	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-14137D	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-14137E	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-14137F	H-4	3	C	A	6	RV	SA	–	O/C	RV	RV	RV	–	–	

NUCLEAR BOILER M-141 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-14137G	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137H	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137J	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137K	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137L	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137M	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137N	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137P	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137R	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-14137S	H-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F013A	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-141 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-141F013B	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013C	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013D	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013E	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013F	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013G	C-3	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-141F013H	C-3	1	C	A	6	RV	SA AO	--	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-141F013J	C-3	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-141F013K	C-3	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-141F013L	C-3	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-141F013M	C-3	1	B,C	A	6	RV	SA AO	--	O/C	RV FS ST	RV FS ST	RV RF RV	-- -- --	-- RR05 RR05	ADS Valve.
PSV-141F013N	C-3	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-141 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-141F013P	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013R	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F013S	C-3	1	C	A	6	RV	SA AO	--	O/C	RV	RV	RV	--	--	
PSV-141F037A	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037B	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037C	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037D	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037E	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037F	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037G	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	

NUCLEAR BOILER M-141 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-141F037H	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037J	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037K	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037L	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037M	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037N	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037P	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037R	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-141F037S	G-4	3	C	A	6	RV	SA	--	O/C	RV	RV	RV	--	--	
XV-141F070A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-141 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-141F070B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F070C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F070D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F071A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F071B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F071C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F071D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-141 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-141F072A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F072B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F072C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F072D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F073A	D-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F073B	F-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-141F073C	G-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER M-141 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-141F073D	H-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER M-141 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
141017	F-3	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
141018	F-3	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
141F010A	C-4	1	A,C	A	24	CK	SA	--	O/C	FS LJ	FS LJ	RF 2Y	RJ04 --	-- --	
141F010B	E-3	1	A,C	A	24	CK	SA	--	O/C	FS LJ	FS LJ	RF 2Y	RJ04 --	-- --	
HV-14107A	C-3	1	C	A	24	CK	SA	--	O	FS	FS	C	--	--	Open test only.
HV-14107B	E-3	1	C	A	24	CK	SA	--	O	FS	FS	C	--	--	Open test only.
HV-14182A	C-2	2	A	A	3	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-14182B	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-141 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-141F032A	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-141F032B	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-141F009	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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-14201	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-14202	B-7	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F041	B-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F043A	B-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F043B	B-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F045A	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F045B	D-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F047A	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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-142F047B	C-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F051A	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F051B	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F051C	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F051D	F-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F053A	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-142F053B	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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-142F053C	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F053D	E-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F055	G-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F057	G-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059A	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059B	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059C	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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-142F059D	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059E	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059F	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059G	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059H	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059L	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059M	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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-142F059N	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059P	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059R	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059S	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059T	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F059U	E-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-142F061	H-6	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

NUCLEAR BOILER VESSEL INSTRUMENTATION M-142 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
142032	D-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142033	D-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142044	E-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 4J08	-- --	Closure test only.
142045	E-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142059	F-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142060	F-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142071	G-8	S	A,C	A	3/8	CK	SA	--	C	FS LT	FS LT	RF RF	RJ08 RJ08	-- --	Closure test only.
142072	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-143 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-143F019	B-4	1	A	A	3/4	GB	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	Rapid acting valve.
HV-143F020	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-143F031A	F-8	1	B	A	28	GT	MO	X	C	FS ST PI	FS ST PI	CS CS 2Y	CJ07 CJ07 –	– – –	
HV-143F031B	F-8	1	B	A	28	GT	MO	X	C	FS ST PI	FS ST PI	CS CS 2Y	CJ07 CJ07 –	– – –	
HV-143F032A	F-8	1	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

REACTOR RECIRCULATION M-143 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-143F032B	F-8	1	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
XV-143F009A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F009B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F009C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F009D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F010A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F010B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR RECIRCULATION M-143 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-143F010C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F010D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F011A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F011B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F011C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F011D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F012A	D-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

REACTOR RECIRCULATION M-143 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-143F012B	F-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F012C	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F012D	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F040A	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F040B	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F040C	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-143F040D	H-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

REACTOR RECIRCULATION M-143 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-143F057A	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F057B	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

REACTOR RECIRCULATION M-143 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
143F013A	E-5	2	A,C	A	1	CK	SA	--	C	FS LJ	FS LJ	RF RF	RJ09 RJ09	-- --	Closure test only.
143F013B	E-5	2	A,C	A	1	CK	SA	--	C	FS LJ	FS LJ	RF RF	RJ09 RJ09	-- --	Closure test only.
XV-143F003A	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F003B	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F004A	E-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F004B	G-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-143F017A	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-143 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-143F017B	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-144

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-144F001	B-2	1	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-144F004	B-2	1	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
XV-14411A	A-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-14411B	B-2	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-14411C	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-14411D	E-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

REACTOR WATER CLEANUP M-144 (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-144F046	G-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

CONTROL ROD DRIVE M-147 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-147F010	A-4	2	B	A	1	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– RR07	
XV-147F180	A-5	2	B	A	1	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– RR07	
XV-147F011	F-5	2	B	A	2	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– RR07	
XV-147F181	F-6	2	B	A	2	GB	AO	–	C	FS ST	FS ST	Q Q	– –	– RR07	

CONTROL ROD DRIVE M-147 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
147114*	A-8	2	C	A	¾	CK	SA	--	O	FS	FS	RF	--	RR06	Open test only.
147115*	D-8	2	C	A	½	CK	SA	--	C	FS	FS	RF	--	RR06	Closure test only.
147138*	D-4	2	C	A	½	CK	SA	--	C	FS	FS	RF	--	RR06	Closure test only.
PSE-147132*	E-7	2	D	A	¼	RD	SA	--	O	--	--	--	--	--	No testing required.
XV-147126*	D-6	2	B	A	½	GB	AO	--	O	FS ST	FS --	RF --	-- --	RR06 RR06	Open test only.
XV-147127*	A-6	2	B	A	½	GB	AO	--	O	FS ST	FS --	RF --	-- --	RR06 RR06	Open test only.

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

STANDBY LIQUID CONTROL M-148

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
148F004A	D-7	2	D	A	1 ½	EX	EX	--	O	EX	EX	2Y	--	--	Explosive valve.
148F004B	D-7	2	D	A	1 ½	EX	EX	--	O	EX	EX	2Y	--	--	Explosive valve.
148F007	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.
148F033A	D-6	2	C	A	1 ½	CK	SA	--	O/C	FS	FS	Q	--	--	
148F033B	F-6	2	C	A	1 ½	CK	SA	--	O/C	FS	FS	Q	--	--	
HV-148F006	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-148F029A	D-5	2	C	A	1 ½	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-148F029B	F-5	2	C	A	1 ½	RV	SA	--	O/C	RV	RV	RV	--	--	

REACTOR CORE ISOLATION COOLING M-149

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
149015	E-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
149016	E-5	2	C	A	2	CK	SA	--	C	FS	--	O	--	RR18	Periodic inspection.
149020	E-5	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
149F011	C-8	2	C	A	6	CK	SA	--	O/C	FS	FS	Q	--	RR17	Open test only.
149F014	E-6	2	C	A	6	CK	SA	--	O	FS	FS	Q	--	--	Open test only.
149F021	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.
149F028	G-5	2	A,C	A	2	CK	SA	--	C	FS LJ	FS LJ	RF RF	RJ13 RJ13	-- --	
149F030	H-3	2	C	A	6	CK	SA	--	O/C	FS	FS	SD	-- --	RR16 RR20	
149F040	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-149 (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
149F063	F-4	2	C	A	2	CK	SA	–	O/C	FS FS	PS FS	RF SD	RJ14 –	– RR19	Open test.
149F064	F-4	2	C	A	2	CK	SA	–	O/C	FS FS	PS FS	RF SD	RJ14 –	– RR19	Open test.
HV-149F007	C-3	1	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F008	C-3	2	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F010	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-149 (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-149F012	E-6	2	B	A	6	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-149F013	E-5	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
FV-149F019	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-149F022	D-5	2	B	A	4	GB	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

REACTOR CORE ISOLATION COOLING M-149 (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-149F025	F-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-149F026	G-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-149F031	H-2	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F059	G-3	2	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

REACTOR CORE ISOLATION COOLING M-149 (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-149F060	G-3	2	A	A	2	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F062	F-4	2	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F084	F-3	2	A	A	2	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-149F088	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.

REACTOR CORE ISOLATION COOLING M-149 (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-149F044A	A-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-149F044B	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-149F044C	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-149F044D	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

RCIC TURBINE-PUMP M-150

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
150F047	G-5	2	C	A	2	CK	SA	–	C	FS	FS	Q	–	–	
HV-15012	C-7	2	B	A	3	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-150F004	H-5	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-150F005	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-150F045	C-8	2	B	A	4	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-150F046	G-4	2	B	A	2	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
PSE-150D001	B-5	2	D	A	2	RD	SA	–	O	–	–	–	–	–	No testing required.

RCIC TURBINE-PUMP M-150 (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-150D002	B-5	2	D	A	2	RD	SA	--	O	--	--	--	--	--	No testing required.
PSV-150F017	C-2	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-150F018	F-5	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

RESIDUAL HEAT REMOVAL M-151 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
151F031A	G-3	2	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
151F031C	H-2	2	C	A	20	CK	SA	–	O/C	FS	FS	Q	–	–	
151F046A	F-3	2	C	A	4	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
151F046C	F-2	2	C	A	4	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR19	Open test only.
151F089A	C-4	2	C	A	2	CK	SA	–	C	FS	FS	RF	RJ18	–	Closure test only.
151F090A	C-4	2	C	A	2	CK	SA	–	C	FS	FS	RF	RJ18	–	Closure test only.
HV-151F004A	F-8	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-151F004C	F-9	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-151 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-151F006A	G-7	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F006C	H-8	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F007A	F-7	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-151F015A	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-151 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-151F016A	B-5	2	A	A	12	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-151F017A	D-3	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F021A	B-7	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F022	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-151 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-151F023	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.
HV-151F024A	E-7	2	B	A	18	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F027A	E-7	2	B	A	6	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
HV-151F028A	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-151 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-151F040	B-2	2	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F048A	G-1	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F049	B-2	2	B	A	4	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F050A	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-151 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-151F122A	E-8	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-15113	A-6	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F025A	D-2	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F030A	B-6	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F030C	H-7	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	

RESIDUAL HEAT REMOVAL M-151 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-151F003A	F-5	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F011A	H-6	2	A	P	4	GT	MA	X	C	LJ	LJ	2Y	–	–	Disabled.
HV-151F047A	C-8	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F103A	C-3	2	A	P	1	GB	MO	X	C	LJ	LJ	2Y	–	–	
PSV-15106A	F-3	2	A,C	A	1	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	–	–	
PSV-151F055A	A-5	2	A,C	A	8	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	–	–	
SV-151F079A	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-151 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
151F031B	G-8	2	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
151F031D	H-8	2	C	A	20	CK	SA	--	O/C	FS	FS	Q	--	--	
151F046B	F-7	2	C	A	4	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
151F046D	F-8	2	C	A	4	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
151F089B	B-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
151F090B	B-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
HV-151F004B	F-3	2	A	A	24	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-151F004D	F-1	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-151 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-151F006B	G-3	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F006D	H-2	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F007B	F-3	2	A	A	6	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-151F008	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-151 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-151F009	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-151F015B	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-151F016B	A-5	2	A	A	12	GB	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-151F017B	C-7	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

RESIDUAL HEAT REMOVAL M-151 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-151F021B	A-3	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F024B	F-3	2	B	A	18	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F027B	E-3	2	B	A	6	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F028B	C-6	2	A	A	18	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-151F048B	F-9	2	B	A	24	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

RESIDUAL HEAT REMOVAL M-151 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-151F050B	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-151F122B	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-15193	A-8	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F025B	B-8	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F029	F-6	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F030B	G-4	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-151F030D	H-3	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	

RESIDUAL HEAT REMOVAL M-151 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-151F126	D-2	1	A,C	A	1	RV	SA	--	O/C	RV LJ	RV LJ	RV 2Y	--	--	
XV-15109A	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-15109B	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-15109C	C-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-15109D	D-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

RESIDUAL HEAT REMOVAL M-151 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-151F003B	F-4	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F011B	H-3	2	A	P	4	GT	MA	X	C	LJ	LJ	2Y	–	–	Disabled.
HV-151F047B	C-2	2	B	A	20	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-151F103B	C-7	2	A	P	1	GB	MO	X	C	LJ	LJ	2Y	–	–	
PSV-15106B	F-7	2	A,C	A	1	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
PSV-151F055B	A-4	2	A,C	A	8	RV	SA	–*	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	
PSV-151F097	G-2	2	A,C	A	4	RV	SA	–	O/C	RV LJ	RV LJ	RV 2Y	– –	– –	

RESIDUAL HEAT REMOVAL M-151 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-151F079B	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-152

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
152005	E-8	2	C	A	3	CK	SA	--	C	FS	--	O	--	RR08	Periodic inspection.
152F003A	E-5	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
152F003B	E-8	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
152F003C	E-6	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
152F003D	E-9	2	C	A	12	CK	SA	--	O/C	FS	FS	Q	--	--	
152F029A	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
152F029B	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
152F030A	A-6	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
152F030B	A-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
152F036A	E-5	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
152F036B	E-8	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open 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
152F036C	E-6	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
152F036D	E-9	2	C	A	3	CK	SA	--	O	FS FS	PS FS	Q SD	-- --	-- RR19	Open test only.
HV-152F001A	H-3	2	A	A	16	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-152F001B	H-1	2	A	A	16	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-152F004A	D-4	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	

CORE SPRAY M-152 (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-152F004B	B-4	2	B	A	12	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-152F005A	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-152F005B	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.

CORE SPRAY M-152 (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-152F006A	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.
HV-152F006B	B-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.
HV-152F015A	E-3	2	A	A	10	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-152F015B	E-3	2	A	A	10	GB	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	

CORE SPRAY M-152 (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-152F031A	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-152F031B	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	
HV-152F037A	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.

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-152F037B	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-152F012A	D-7	2	C	A	1 ½	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-152F012B	B-7	2	C	A	1 ½	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-152F032A	G-4	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-152F032B	H-6	2	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	
XV-152F018A	B-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	
XV-152F018B	A-3	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 --	-- --	

FUEL POOL COOLING & CLEANUP M-153 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
153071A	A-5	3	C	A	8	CK	SA	--	O	FS FS	PS FS	O SD	--	RR09 RR20	Open test only.
153071B	A-5	3	C	A	8	CK	SA	--	O	FS FS	PS FS	O SD	--	RR09 RR20	Open test only.

HIGH PRESSURE COOLANT INJECTION M-155

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
155012	E-5	2	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
155013	E-5	2	C	A	2	CK	SA	--	C	FS	--	O	--	RR18	Periodic inspection.
155038	E-5	2	A	P	1	GB	MA	--	C	LJ	LJ	2Y	--	--	
155F005	E-6	2	C	A	14	CK	SA	--	O	FS	FS	Q	--	--	Open test only.
155F019	C-8	2	C	A	16	CK	SA	--	O/C	FS	FS	Q	--	RR17	Open test only.
155F045	H-3	2	C	A	16	CK	SA	--	O/C	FS	FS	SD	--	RR16 RR20	
155F046	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.
155F049	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.
155F076	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-155 (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
155F077	F-4	2	C	A	3	CK	SA	–	O/C	FS FS	PS FS	RF SD	RJ16 –	– RR19	Open test.
HV-155F001	D-8	2	B	A	10	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-155F002	B-3	2	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F003	B-3	1	A	A	10	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F004	B-8	2	B	A	16	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 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-155F006	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-155F007	E-6	2	B	A	14	GT	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-155F008	D-5	2	B	A	10	GB	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-155F011	C-5	2	B	A	10	GT	MO	X	C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

HIGH PRESSURE COOLANT INJECTION M-155 (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-155F012	F-3	2	A	A	4	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F028	F-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-155F029	G-8	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-155F042	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-155 (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-155F066	G-3	2	A	A	20	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F075	F-4	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F079	F-3	2	A	A	3	GT	MO	X	O/C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
HV-155F100	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-155 (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-155F024A	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-155F024B	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-155F024C	C-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	
XV-155F024D	D-4	1	C	A	1	XC	SA	X	C	FS PI	FS PI	RF 2Y	RJ20 –	– –	

HPCI TURBINE - PUMP M-156 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
156F048	G-4	2	C	A	2	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR20	Open test only.
156F052	G-5	2	C	A	2	CK	SA	–	C	FS	FS	Q	–	–	Close test only.
156F057	G-5	2	C	A	2	CK	SA	–	O	FS FS	PS FS	Q SD	– –	– RR20	Open test only.
FV-15612	B-7	2	B	A	10	GB	HO	X	O/C	FS ST PI	FS – PI	Q O 2Y	– – –	– RR10 –	
HV-156F025	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-156F026	H-4	2	B	A	1	GB	AO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	
HV-156F059	E-3	2	B	A	2	GB	MO	X	O/C	FS ST PI	FS ST PI	Q Q 2Y	– – –	– – –	

HPCI TURBINE - PUMP M-156 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-156F020	B-2	2	C	A	1	RV	SA	–	O/C	RV	RV	RV	–	–	
PSV-156F050	G-3	2	C	A	1½	RV	SA	–	O/C	RV	RV	RV	–	–	
PSE-156D003	B-5	2	D	A	16	RD	SA	–	O	–	–	–	–	–	No testing required.
PSE-156D004	A-5	S	D	A	16	RD	SA	–	O	–	–	–	–	–	No testing required.

CONTAINMENT ATMOSPHERE CONTROL M-157 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-15703	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-15704	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-15705	D-2	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-15711	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.

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-15713	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-15714	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-15721	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-15722	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.

CONTAINMENT ATMOSPHERE CONTROL M-157 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-15723	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-15724	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-15725	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-15766	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-157 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-15768	H-4	2	A	A	6	GT	MO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– – – –	
PSV-15704A1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704A2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704B1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704B2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704C1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	

CONTAINMENT ATMOSPHERE CONTROL M-157 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-15704C2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15604D1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15604D2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704E1	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
PSV-15704E2	F-4	2	C	A	24	RV	SA AO	X	O/C	RV PI	RV PI	RV 2Y	– –	– –	
SV-15734A	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.

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-15734B	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-15736A	G-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-15736B	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-15737	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-157 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-15738	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-15740A	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-15740B	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-15742A	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-157 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-15742B	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-15750A	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-15750B	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-15752A	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-157 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-15752B	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-15767	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-15774A	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-15774B	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-157 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-15776A	C-4	2	A	A	1	GB	SO	X	C	FS ST PI LJ	FS SI PI LJ	Q Q RF WY	– – RJ19 –	– – – –	Rapid acting valve.
SV-15776B	D-5	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-15780A	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-15780B	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-157 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-15782A	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-15782B	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-15789	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-157 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-157104	E-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157105	E-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157106	F-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157107	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-157 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-157100A	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-157101A	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-157102A	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	-- -- -- LJ	-- -- -- 2Y	-- -- RJ19 --	-- -- -- --	Disabled rapid acting valve.
SV-157103A	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-157 Sheet 7

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-157100B	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157101B	B-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157102B	C-3	2	A	P	1	GB	SO	X	C	FS ST PI LJ	– – – LJ	– – – 2Y	– – RJ19 –	– – – –	Disabled rapid acting valve.
SV-157103B	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-161 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-16108A1	B-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-16108A2	B-5	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-16116A1	G-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-16116A2	H-3	2	A	A	3	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	

CONTROL STRUCTURE CHILLED WATER M-186 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
086018	D-4	3	C	A	6	CK	SA	--	O	FS FS	PS FS	Q RF	RJ17 RJ17	-- --	Open test only.
086039	F-5	3	C	A	6	CK	SA	--	O	FS FS	PS FS	Q RF	RJ17 RJ17	-- --	Open test only.
086241	A-4	3	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
HV-08601A	H-5	3	B	P	2	GT	MO	X	O	--	--	--	--	--	Disabled. No testing required.
HV-08602A	H-5	3	B	P	2	GT	MO	X	C	--	--	--	--	--	Disabled. No testing required.
HV-08603A	H-5	3	B	P	2	GT	MO	X	O	--	--	--	--	--	Disabled. No testing required.
HV-08693A	A-5	3	B	A	8	BF	MO	X	O	FS ST PI	FS SI PI	Q Q 2Y	-- -- --	-- -- --	
PSV-08624A1	B-5	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-08624A2	E-5	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-08633A	B-7	S	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

CONTROL STRUCTURE CHILLED WATER M-186 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
TV-08612A	C-5	3	B	A	6	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08643A	G-8	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08652A	C-9	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08662A	A-9	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.

CONTROL STRUCTURE CHILLED WATER M-186 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
086118	D-4	3	C	A	6	CK	SA	--	O	FS FS	PS FS	Q RF	RJ17 RJ17	-- --	Open test only.
086139	F-5	3	C	A	6	CK	SA	--	O	FS FS	PS FS	Q RF	RJ17 RJ17	-- --	Open test only.
086341	C-4	3	C	A	2	CK	SA	--	C	FS	FS	RF	RJ18	--	Closure test only.
HV-08601B	H-5	3	B	P	2	GT	MO	X	O	--	--	--	--	--	Disabled. No testing required.
HV-08602B	H-5	3	B	P	2	GT	MO	X	C	--	--	--	--	--	Disabled. No testing required.
HV-08603B	H-5	3	B	P	2	GT	MO	X	O	--	--	--	--	--	Disabled. No testing required.
HV-08693B	A-5	3	B	A	8	BF	MO	X	O	FS ST PI	FS ST PI	Q Q 2Y	-- -- --	-- -- --	
PSV-08624B1	B-5	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-08624B2	D-5	3	C	A	2	RV	SA	--	O/C	RV	RV	RV	--	--	
PSV-08633B	B-7	S	C	A	1	RV	SA	--	O/C	RV	RV	RV	--	--	

CONTROL STRUCTURE CHILLED WATER M-186 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
TV-08612B	B-5	3	B	A	6	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08643B	G-8	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08652B	C-9	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.
TV-08662B	A-9	S	B	A	3	GT	MO	--	T	FS ST	PS --	Q --	-- --	RR13 RR13	Modulating control valve.

CONTROL STRUCTURE CHILLED WATER M-186 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
SV-08621A	F-8	S	B	A	1	GB	SO	--	O	FS ST	PS --	Q --	-- --	RR14 RR14	

CONTROL STRUCTURE CHILLED WATER M-186 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
SV-08621B	F-8	S	B	A	1	GB	SO	–	O	FS ST	PS –	Q –	– --	RR14 RR14	

REACTOR BUILDING CHILLED WATER M-187 Sheet 2

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
HV-18781A1	H-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18781A2	G-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18781B1	D-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18781B2	C-2	2	A	A	8	GT	AO	X	C	FS ST PI LJ	FS SI PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	

REACTOR BUILDING CHILLED WATER M-187 Sheet 2 (Continued)

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
HV-18782A1	D-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18782A2	C-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18782B1	H-2	2	A	A	8	BF	AO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	– – – –	– RR21 – –	
HV-18782B2	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-187 Sheet 2 (Continued)

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
HV-18791A1	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-18791A2	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-18791B1	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-18791B2	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-187 Sheet 2 (Continued)

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
HV-18792A1	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-18792A2	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-18792B1	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-18792B2	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
1S240A TIP Channel A Man Valve	N/A	S	A	A	3/8	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
1S240A TIP Channel A Squib Valve	N/A	S	D	A	3/8	EX	EX	--	C	EX	EX	2Y	--	--	
1S240B TIP Channel B Man Valve	N/A	S	A	A	3/8	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
1S240B TIP Channel B Squib Valve	N/A	S	D	A	3/8	EX	EX	--	C	EX	EX	2Y	--	--	
1S240C TIP Channel C Man Valve	N/A	S	A	A	3/8	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
1S240C TIP Channel C Squib Valve	N/A	S	D	A	3/8	EX	EX	X	C	EX	EX	2Y	--	--	
1S240D TIP Channel D Man Valve	N/A	S	A	A	3/8	BA	SO	X	C	FS ST PI LJ	FS ST PI LJ	Q Q 2Y 2Y	-- -- -- --	-- -- -- --	Rapid acting valve.
1S240D TIP Channel D Squib Valve	N/A	S	D	A	3/8	EX	EX	--	C	EX	EX	2Y	--	--	
1S240E TIP Channel E Man Valve	N/A	S	A	A	3/8	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
1S240E 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-113
Valves:	HV-11313 HV-11314 HV-11345 HV-11346
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-126

Valves: SV-12651

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-126
Valves:	SV-12654A SV-12654B
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-139

Valves	Category	Class
HV-139F001 B, F, K, P	A	1
HV-139F002 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-139F001 B,F,K,P). Double valve isolation is provided by HV-139F002 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-139

Valves: HV-139F006
HV-139F007
HV-139F008
HV-139F009

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-139F006, HV-139F008). Double valve isolation is provided by HV-139F007 and HV-139F009. 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-141
Valves:	HV-141F022 A,B,C,D HV-141F028 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-143

Valves: HV-143F031 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-151 Sh. 1 and Sh. 3

Valve	Category
HV-151F015A	A
HV-151F015B	A
HV-151F022	A
HV-151F023	A
HV-151F050A	A,C
HV-151F050B	A,C
HV-151F122A	A
HV-151F122B	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-151 Sh. 3

Valves: HV-151F008, HV-151F009

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-152

Valves	Category
HV-152F005A	A
HV-152F005B	A
HV-152F006A	A,C
HV-152F006B	A,C
HV-152F037A	A
HV-152F037B	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-155

Valve: HV-155F006

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-157 Sht. 1

Valves:

HV-15703	HV-15713	HV-15723
HV-15704	HV-15714	HV-15724
HV-15705	HV-15721	HV-15725
HV-15711	HV-15722	

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-187 Sh. 2	
Valves:	HV-18791A1	HV-18792A1
	HV-18791A2	HV-18792A2
	HV-18791B1	HV-18792B1
	HV-18791B2	HV-18792B2
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-126

Valves: 126018 and 126029

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-126

Valves: 126072
126074
126152
126154
126164

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, 126152 and 126154, 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

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

attempt to verify check 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 126152 and 126154 will also be performed at that time with an air pressure applied through the outboard test valves (126021, 126031), opening the inboard test valves (126155, 126153), and observing essentially unrestricted flow.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 03

System: Diesel Generators

P&ID: M-134

Valves: 034067A 034067B 034067C 034067D 034153E1
034075A 034075B 034075C 034075D 034153E2

Category: C

Class: 3

Function: Diesel generator air start system flowpath.

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: These 1" ball check valves, located in the inlet line to each diesel starting air receiver tank, are installed in lines that have no pressure nor airflow instrumentation and that have no provision for connecting any temporary instruments. Therefore, compliance with the code requirement is impractical because of design limitations. The only method available for closure exercise testing of these check valves is to shutoff a diesel start air compressor, coincident with opening of a test connection upstream of the check valve under test. As this procedure degrades the readiness of each train of the diesel air start subsystem, it is not practicable for performance any more frequently than refueling outage frequency (once per 18 months).

Alternative Testing: Each check valve will be closure exercise tested once per 18 months ($\pm$ 3 months).

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 04

System:	Nuclear Boiler
P&ID:	M-141
Valves:	141F010 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-141
Valves:	141F024A 141F024B 141F024C 141F024D 141F029A 141F029B 141F029C 141F029D
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.

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

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 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-141

Valves:

141F036A	141F036J	141F036S
141F036B	141F036K	141F040G
141F036C	141F036L	141F040J
141F036D	141F036M	141F040K
141F036E	141F036N	141F040L
141F036F	141F036P	141F040M
141F036G	141F036R	141F040N
141F036H		

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.

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-141

Valves: HV-141F032 A,B

Category: A, C

Class: 2

Function: Containment isolation; HPCI flowpath (HV-141F032B only); RCIC flowpath (HV-141F032A 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-142

Valve:

142032	142044	142059	142071
142033	142045	142060	142072

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

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 08 (Cont'd)

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-143

Valves: 143F013 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-143
Valves:	XV-143F017 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-148

Valves: HV-148F006

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-148F006, 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-148

Valves: 148F007

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 148F007, 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-149

Valves: 149F028, 149F040, 149F021

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-149

Valves: 149F063, 149F064

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-155

Valves: 155F049, 155F046

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-155

Valves: 155F076, 155F077

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

System: Control Structure Chilled Water and Emergency Service Water

P&ID: M-186 and M-111

Valves: 086018
086039
086118
086139
111144
111145

Category: C

Class: 3

Function: Condenser and Chilled Water Flowpath

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Deferment: The ultimate function of these valves is providing chilled water to the cooling coils of the Control Structure HVAC system. Rather than individually testing each valve for proper functioning, operation of the chilled water loop with cooling supplied by the emergency condenser loop (cooled by ESW) provides a functional system test which is indicative of proper operation of all system components. As this is an auxiliary support system rather than a water-supply system, this testing provides more meaningful results than individual valve testing.

Individual exercise testing of the check valves in these subsystems is not feasible. System interlocks require initiation and startup of circulating pumps and/or chiller, after which the valves automatically actuate.

Check valves 086018 and 086118 are installed in the emergency condenser water circulating pump discharge line of each chiller. Check valves 111144 and 111145 are installed in the Emergency Service Water supply line to the emergency condenser of each chiller. Flow through each of these lines is controlled by a temperature control valve, whose internal geometry reduces flow through the line as

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 17 (Cont'd.)

cooling water temperature decreases below its straight-through full flow setpoint. Maximum required accident condition flow of 740 gpm through each line is normally achieved only once each 18 month period, during performance of Emergency Service Water System flow balancing, by defeating electrical control of each of the temperature control valves.

Check valves 086039 and 086139 are installed in each chilled water pump discharge line. Each line has a permanently installed flowrate instrument, with an uninstrumented 2" line coming off upstream of the flow instrument to service the Unit 1 Emergency Switchgear Rooms Cooling load. Adequacy of design flow through these lines is measured and confirmed once each 18 month period, during Unit 1 Emergency Switchgear Rooms Cooling Subsystem flow balancing.

Alternative Testing:

As part of each quarterly chilled water flow verification test, monitor the chilled water loop chiller discharge temperature and verify that the specified discharge temperatures are maintained. In conjunction with this testing perform "partial" opening exercise tests of check valves 086018, 086039, 086118, 086139, 111144 and 111145. In conjunction with Emergency Service Water System Flow Balance Testing, conducted at least once each 18 month period, perform "full" opening exercise tests of check valves 086018, 086118, 111144 and 111145. In conjunction with Unit 1 Emergency Switchgear Rooms Cooling Subsystem flow balancing, conducted at least once each 18 month period, perform "full" opening exercise tests of check valves 086039 and 086139.

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 18

System	P&ID	Valve Number	Class
RCIC	M-149	149015	2
RHR	M-151	151F089A	2
RHR	M-151	151F089B	2
RHR	M-151	151FO90A	2
RHR	M-151	151FO90B	2
Core Spray	M-152	152FO29A	2
Core Spray	M-152	152FO29B	2
Core Spray	M-152	152FO30A	2
Core Spray	M-152	152FO30B	2
HPCI	M-155	155012	2
ESW/CSCW	M-186	086241	3
ESW/CSCW	M-186	086341	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 of each pair of Core Spray System check valves in combination. Using these test connections in RHR, Core

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

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 in potential 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 during plant 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 CSCW 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.

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

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

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 CSCW System by monitoring the essential restriction of their reverse flow, through their upstream test connections, once per 18 months (±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-126	SV-12605	A	2	Containment Isolation
CIG	M-126	SV-12643	B	3	Instrument Gas Storage
CIG	M-126	SV-12644	B	2	Instrument Gas Storage
CIG	M-126	SV-12648	B	3	Instrument Gas Storage
CIG	M-126	SV-12649	B	2	Instrument Gas Storage
CIG	M-126	SV-12651	A	2	Containment Isolation
CIG	M-126	SV-12654A	A	2	Containment Isolation
CIG	M-126	SV-12654B	A	2	Containment Isolation
CIG	M-126	SV-12661	A	2	Containment Isolation
CIG	M-126	SV-12671	A	2	Containment Isolation
CAC	M-157	SV-15734A	A	2	Containment Isolation
CAC	M-157	SV-15734B	A	2	Containment Isolation
CAC	M-157	SV-15736A	A	2	Containment Isolation
CAC	M-157	SV-15736B	A	2	Containment Isolation
CAC	M-157	SV-15737	A	2	Containment Isolation
CAC	M-157	SV-15738	A	2	Containment Isolation
CAC	M-157	SV-15740A	A	2	Containment Isolation
CAC	M-157	SV-15740B	A	2	Containment Isolation
CAC	M-157	SV-15742A	A	2	Containment Isolation
CAC	M-157	SV-15742B	A	2	Containment Isolation
CAC	M-157	SV-15750A	A	2	Containment Isolation
CAC	M-157	SV-15750B	A	2	Containment Isolation
CAC	M-157	SV-15752A	A	2	Containment Isolation
CAC	M-157	SV-15752B	A	2	Containment Isolation
CAC	M-157	SV-15767	A	2	Containment Isolation
CAC	M-157	SV-15774A	A	2	Containment Isolation

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 19 (Cont'd.)

System	P&ID	Valve	Category	Class	Function
CAC	M-157	SV-15774B	A	2	Containment Isolation
CAC	M-157	SV-15776A	A	2	Containment Isolation
CAC	M-157	SV-15776B	A	2	Containment Isolation
CAC	M-157	SV-15780A	A	2	Containment Isolation
CAC	M-157	SV-15780B	A	2	Containment Isolation
CAC	M-157	SV-15782A	A	2	Containment Isolation
CAC	M-157	SV-15782B	A	2	Containment Isolation
CAC	M-157	SV-15789	A	2	Containment Isolation
CAC	M-157	SV-157100A	A*	2	Containment Isolation
CAC	M-157	SV-157100B	A*	2	Containment Isolation
CAC	M-157	SV-157101A	A*	2	Containment Isolation
CAC	M-157	SV-157101B	A*	2	Containment Isolation
CAC	M-157	SV-157102A	A*	2	Containment Isolation
CAC	M-157	SV-157102B	A*	2	Containment Isolation
CAC	M-157	SV-157103A	A*	2	Containment Isolation
CAC	M-157	SV-157103B	A*	2	Containment Isolation
CAC	M-157	SV-157104	A*	2	Containment Isolation
CAC	M-157	SV-157105	A*	2	Containment Isolation
CAC	M-157	SV-157106	A*	2	Containment Isolation
CAC	M-157	SV-157107	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-100-002) 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-12605	SE-159-067	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12643	TP-125-007	Open	OP-125-001/GO-100-002	Open
CIG	SV-12644	TP-125-007	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12648	TP-125-009	Open	OP-125-001/GO-100-002	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-12649	TP-125-009	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12651	SE-159-037	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12654A	SE-159-046	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12654B	SE-159-038	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12661	SE-159-069	Closed	OP-125-001/GO-100-002	Open
CIG	SV-12671	SE-159-090	Closed	OP-125-001/GO-100-002	Open
CAC	SV-15734A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15734B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15736A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15736B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15737	SE-159-103	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15738	SE-159-103	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15740A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15740B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15742A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15742B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15750A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15750B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15752A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15752B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15767	SE-159-102	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15774A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15774B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15776A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15776B	SE-159-020	Closed	OP-173-001/GO-100-002	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-15780A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15780B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15782A	SE-159-019	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15782B	SE-159-020	Closed	OP-173-001/GO-100-002	Open
CAC	SV-15789	SE-159-102	Closed	OP-173-001/GO-100-002	Open
CAC	SV-157100A	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157100B	SE-159-020	Closed	Valve disabled	Closed
CAC	SV-157101A	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157101B	SE-159-020	Closed	Valve disabled	Closed
CAC	SV-157102A	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157102B	SE-159-020	Closed	Valve disabled	Closed
CAC	SV-157103A	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157103B	SE-159-020	Closed	Valve disabled	Closed
CAC	SV-157104	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157105	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157106	SE-159-019	Closed	Valve disabled	Closed
CAC	SV-157107	SE-159-019	Closed	Valve disabled	Closed

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 20

System	P&ID	Valve	System	P&ID	Valve
MSIV-LCS (183)	M-139	XV-13910B	RPV (continued)	M-142	XV-142F043B
		XV-13910F			XV-142F045A
		XV-13910K			XV-142F045B
		XV-13910P			XV-142F047A
RPV	M-141	XV-141F009			XV-142F047B
Main Steam	M-141	XV-141F070A			XV-142F051A
		XV-141F070B			XV-142F051B
		XV-141F070C			XV-142F051C
		XV-141F070D			XV-142F051D
		XV-141F071A			XV-142F053A
		XV-141F071B			XV-142F053B
		XV-141F071C			XV-142F053C
		XV-141F071D			XV-142F053D
		XV-141F072A			XV-142F055
		XV-141F072B			XV-142F057
		XV-141F072C			XV-142F059A
		XV-141F072D			XV-142F059B
		XV-141F073A			XV-142F059C
		XV-141F073B			XV-142F059D
		XV-141F073C			XV-142F059E
		XV-141F073D			XV-142F059F
RPV	M-142	XV-14201			XV-142F059G
		XV-14202			XV-142F059H
		XV-142F041			XV-142F059L
		XV-142F043A			XV-142F059M

REFUELING OUTAGE TEST JUSTIFICATION NUMBER 20 (Cont'd)

System	P&ID	Valve	System	P&ID	Valve
RPV (continued)	M-142	XV-142F059N	RXR (continued)	M-143	XV-143F012D
		XV-142F059P			XV-143F040A
		XV-142F059R			XV-143F040B
		XV-142F059S			XV-143F040C
		XV-142F059T			XV-143F040D
		XV-142F059U			XV-143F057A
		XV-142F061			XV-143F057B
RXR	M-143	XV-143F003A	RWCU	M-144	XV-14411A
		XV-143F003B			XV-14411B
		XV-143F004A			XV-14411C
		XV-143F004B			XV-14411D
		XV-143F009A			XV-144F046
		XV-143F009B	RCIC	M-149	XV-149F044A
		XV-143F009C			XV-149F004B
		XV-143F009D			XV-149F044C
		XV-143F010A			XV-149F044D
		XV-143F010B	RHR	M-151	XV-15109A
		XV-143F010C			XV-15109B
		XV-143F010D			XV-15109C
		XV-143F011A			XV-15109D
		XV-143F011B	Core Spray	M-152	XV-152F018A
		XV-143F011C			XV-152F018B
		XV-143F011D	HPCI	M-155	XV-155F024A
		XV-143F012A			XV-155F024B
		XV-143F012B			XV-155F024C
		XV-143F012C			XV-155F024D

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

System: Emergency Service Water

P&ID: M-111, Sheet 1

Valves: 011001, 011002, 011003, 011004

Category: C

Class: 3

Function: Pump Discharge Check

Impractical Test Requirement: Valve Internals Integrity Verification of NRC IEB 83-03.

Basis for Relief: These check valves, located in the pump discharge, are required to open during system operation to permit cooling water flow to system loads. During quarterly pump tests, the valves are in fact cycled open and design flow passed through, indicating operability. However, as discussed in IE Bulletin 83-03, such testing in raw water cooling systems may be inadequate to ensure valve mechanical integrity.

Alternative Testing: In addition to quarterly exercising in conjunction with pump tests, verify valve mechanical integrity by visual inspection during disassembly. Commencing with the first refueling outage, 1 valve will be disassembled at least once per 18 months (± 3 months), such that all valves are inspected at least once per 72 months (± 6 months).

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 at least one different valve each 18 months (± 3 months), such that all valves are diagnostic-tested or inspected once per 72 months (± 6 months).

RELIEF REQUEST NUMBER 02

System: Emergency Service Water

P&ID: M-111 Sheets 1,3

Valves:

011033	011036	011039	011514
011034	011037	011040	
011035	011038	011513	

Category: C

Class: 3

Function: Diesel generator cooling flowpath alignment.

Impractical Test Requirement: Exercise valves once per 92 days and Valve Internals Integrity Verification of NRC IEB 83-03.

Basis for Relief: Individual pressure or flow indication is not provided on ESW cooling lines to the diesel generators, nor is position indication installed. This configuration provides no direct evidence of valve position during system operation. A level of assurance of proper valve operation is provided by observation of appropriate system flows during ESW pump testing and adequate cooling during diesel generator operation.

Due to the sharing of diesel generators between two units, removal of a diesel generator from service to accomplish the alternative inspections will normally occur with one unit in operation. Minimization of these inspections is indicated.

Alternative Testing: Verify proper valve functioning by valve disassembly. Commencing with the first refueling outage, two valves will be inspected at least once per 18 months (± 3 months), such that all valves are inspected once per 72 months (± 6 months). See Relief Request 19 for further details of testing.

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 at least two different valves each 18 months (± 3 months), such that all valves are diagnostic-tested or inspected once per 72 months (± 6 months).

RELIEF REQUEST NUMBER 03

System: Diesel Fuel Oil Transfer

P&ID: M-120

Pumps: OP514 A thru E

Class: 3

Function: Fuel Oil Transfer from Storage Tank to Day Tank

Impractical Test Requirement: Test pumps in accordance with OMa-1988, Part 6, paragraph 5.2.

Basis for Relief: Four of these pumps (OP514 A thru D) are a sealed-unit submersible type with the entire unit submerged in the Diesel Oil Storage Tanks. None of these pumps include any provisions for flowrate, inlet pressure, bearing temperature, or vibration amplitude indication or measurement. The Susquehanna Steam Electric Station Technical Specifications presently require at least a monthly functional test of these pumps. This test verifies fuel oil flow from the storage tank to each diesel's skid-mounted day tank. Similarly, the diesel oil firing pumps are tested during the diesel functional tests. These pumps take suction from the day tank and supply the diesel cylinders. SSES considers all these pumps an extension of the diesel engine equipment skid, and therefore all are adequately tested per Technical Specifications along with the diesel itself. In addition the actual flowrate for the diesel fuel oil transfer pumps is over five times the required diesel engine fuel usage at rated conditions. Thus, even a large reduction in pump flow will not affect system operability.

Alternative Testing: Each pump will continue to be functionally tested at least monthly via Technical Specification 4.8.1.1.2. No other testing will be performed.

RELIEF REQUEST NUMBER 04

System: MSIV Leakage Control System

P&ID: M-139

Valves: 139F010
139F011

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-141

Valves: PSV-141F013 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-147

Valves	Category
147114-001 through 147114-185	C
147115-001 through 147115-185	C
XV-147126-001 through XV-147126-185	B
XV-147127-001 through XV-147127-185	B
147138-001 through 147138-185	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 (147138 -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 (147114 -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 (147115 -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-147126 -001 through -185) and the scram exhaust valves (XV-147127 -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 (147114-XXX), of the scram inlet valves (XV-147126-XXX), and of the scram exhaust valves (XV-147127-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 (147115-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 (147138-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-147

Valves: XV-147FO10, XV-147FOll
XV-147Fl8O, XV-147FI81

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-147 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 the OMa-1988 Standard, 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

RELIEF REQUEST NUMBER 07 (Cont'd)

to exceed its 30 second Stroke Time Limit and plant Technical Specification 4.1.3.4.a.1 limit.

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-152

Valves: 152005

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-153

Valves: 153071 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-135-301) 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-156, Sheet 1

Valves: FV-15612

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-15612, 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-156, Sheet 1

Pumps: 1P204 and 1P209 (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-156, Sheet 2

Pumps: 1P213 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 values. (OMa-1988, Part 6, paragraph 5.2.d).

Basis For Relief: HPCI Auxiliary Oil Pump 1P213 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 flowrate 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

System: Control Structure Chilled Water

P&ID: M-186

Valves	Class
TV-08612A	3
TV-08612B	3
TV-08643A	Non-Code; Safety Function
TV-08643B	Non-Code; Safety Function
TV-08652A	Non-Code; Safety Function
TV-08652B	Non-Code; Safety Function
TV-08662A	Non-Code; Safety Function
TV-08662B	Non-Code; Safety Function

Category: B

Function: Control Structure Chilled Water System Temperature Control

Impractical Test Requirement:
1) Exercise valves once per 92 days.
2) Exercise valves by full stroke to the position(s) required to fulfill their function(s).

Basis for Relief: The ultimate function of these valves is providing chilled water to the cooling coils of the Control Structure HVAC system. Rather than individually testing each valve for proper functioning, operation of the chilled water loop with cooling supplied by the emergency condenser loop (cooled by ESW) provides a functional system test which is indicative of proper operation of all system components. As this is an auxiliary support system rather than a water-supply system, this testing provides more meaningful results than individual valve testing.

RELIEF REQUEST NUMBER 13 (Cont'd)

Individual stroke testing (including stroke time measurement) of the motor operated control valves in these subsystems is not feasible. System interlocks require initiation and startup of circulating pumps and/or chiller, after which the valves in the emergency condenser cooling loop automatically actuate in their temperature controlling mode. Time delays and equipment actuation times render any attempts at stroke time measurement meaningless. No provision is made for individual stroking of valves in the circuitry. Therefore, compliance with the Code requirements is impractical because of design limitations.

Alternative Testing: As part of each quarterly Control Structure Chilled Water System flow test, monitor the chilled water loop chiller discharge temperature and verify that the specified discharge temperatures are maintained. In conjunction with this testing perform part-stroke exercising of these valves. In conjunction with Unit 1 Emergency Switchgear Room Cooling Subsystem flow balancing, conducted at least once each 18 month period, perform opening exercise tests of these valves to the full open position.

RELIEF REQUEST NUMBER 14

System: Control Structure Chilled Water

P&ID: M-186

Valves	Category	Class
SV-08621A	B	Non-Code; Safety Function
SV-08621B	B	Non-Code; Safety Function

Function: Chiller Oil Cooler Flowpath

Impractical Test Requirement: Exercise valves once per 92 days.

Basis for Relief: The ultimate function of these valves is providing chilled water to the cooling coils of the Control Structure HVAC system. Rather than individually testing each valve for proper functioning, operation of the chilled water loop with cooling supplied by the emergency condenser loop (cooled by ESW) provides a functional system test which is indicative of proper operation of all system components. As this is an auxiliary support system rather than a water-supply system, this testing provides more meaningful results than individual valve testing.

Individual stroke testing (including stroke time measurement) of the solenoid operated valves in these subsystems is not feasible. System interlocks require initiation and startup of circulating pumps and/or chiller, after which the valves automatically actuate. Time delays and equipment actuation times render any attempts at stroke time measurement meaningless. No provision is made for individual stroking of valves in the circuitry.

Solenoid valves SV-08621 A and B are installed in the cooling water supply line to the oil cooler of each chiller. The valves are skid mounted. The valves are not equipped with any form of manual control, nor with position indication, nor the line with any means of flow determination. Chiller oil temperature must remain below the high temperature shutoff setpoint, however, for the chiller to continue running; and this requires a

RELIEF REQUEST NUMBER 14 (Cont')

continuous flow of cooling water through its oil cooler. In the absence of any direct means of determining solenoid valve opening, this characteristic will be utilized.

Alternative Testing: As part of each quarterly chilled water flow verification test, monitor the chilled water loop chiller discharge temperature and verify that the specified discharge temperatures are maintained. Perform opening exercise tests of solenoid valves SV-08621 A and B in conjunction with the quarterly chiller pump tests by confirming that each chiller tested continues running until shut down and that its oil temperature remains within its normal range.

RELIEF REQUEST NUMBER 15

System: Control Structure Chilled Water

P&ID: M-186

Pump	Class	Function
OP162A	S	Chilled water loop circulating pump
OP162B	S	Chilled water loop circulating pump
OP171A	3	Emergency condenser water circulating pump
OP171B	3	Emergency condenser water circulating pump

Impractical Test Requirement: OMa-1988, Part 6, paragraph 5.2, requirement that the resistance of the system be varied until either the measured differential pressure or the measured flow rate equals the corresponding reference value.

Basis for Relief: Control of the flows and pressures of these pumps is automatic; no means for manual control has been provided. The ultimate function of these pumps is to provide chilled water to the cooling coils of the Control Structure HVAC system. Rather than individually testing each pump for proper functioning based on the prescribed measurements required by IWP, operation of the chilled water loop with cooling supplied by the emergency condenser loop provides a functional system test which is indicative of proper operation of all system components. This testing is more practical and provides a method of pump testing which does not require the removal of this safety system from operation. See Relief Request Number 40.

Alternative Testing: Monitor the chilled water loop chiller discharge temperature and verify that the specified discharge temperature is maintained demonstrating proper functioning of each entire chiller train. Additionally monitor the three Table 2 test quantities: differential pressure, flow rate, and vibration amplitude.

RELIEF REQUEST NUMBER 16

Systems:	RCIC	HPCI
P&IDs:	M-149	M-155
Valves:	149F030	155F045
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.

Alternative 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-149	M-155
Valves:	149F011	155F019
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 149F030 or HPCI valve 155F045) will not provide positive verification, since there is no appropriate pressure instrumentation provided on the CST side of 155F019, 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-149	M-155
Valves:	149016	155013
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-111	011033	C	3	EDG OG501A cooling
ESW	M-111	011034	C	3	EDG OG501A cooling
ESW	M-111	011035	C	3	EDG OG501C cooling
ESW	M-111	011036	C	3	EDG OG501C cooling
ESW	M-111	011037	C	3	EDG OG501B cooling
ESW	M-111	011038	C	3	EDG OG501B cooling
ESW	M-111	011039	C	3	EDG OG501D cooling
ESW	M-111	011040	C	3	EDG OGS01D cooling
ESW	M-111	011513	C	3	EDG OG501E cooling
ESW	M-111	011514	C	3	EDG OG501E cooling
RCIC	M-149	149F063	C	2	Turbine exh steam line vac brkr
RCIC	M-149	149F064	C	2	Turbine exh steam line vac brkr
RHR	M-151	151F046 A/B/C/D	C	2	RHR pump minimum flow line
LPCS	M-152	152F036 A/B/C/D	C	2	CS pump minimum flow line
HPCI	M-155	155F076	C	2	Turbine exh steam line vac brkr
HPCI	M-155	155F077	C	2	Turbine exh steam line vac brkr

RELIEF REQUEST NUMBER 19 (Cont'd)

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.

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-149	149F021	C	2	RCIC pump minimum flow line
RCIC	M-149	149F030	C	2	RCIC supp pool suction line
FPC&C	M-153	153071 A/B	C	3	FPC&C isolation from ESW system
HPCI	M-155	155F045	C	2	HPCI supp pool suction line
HPCI	M-155	155F046	C	2	HPCI pump minimum flow line
HPCI	M-156	156F048	C	2	HPCI lube oil cooler return line
HPCI	M-156	156F057	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

RELIEF REQUEST NUMBER 20 (Cont'd)

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.

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-109	HV-10943A2/B2	B	3	ESW System isolation
ESW/SW	M-110	HV-11024A1/A2/A3/A4	B	3	ESW System isolation
ESW/SW	M-111	HV-11143A/B	B	3	ESW System isolation
CAC	M-157	HV-15703, HV-15704, HV-15705, HV-15711, HV-15713, HV-15714, HV-15721, HV-15722, HV-15723, HV-15724, HV-15725	A	2	Containment isolation
LRW	M-161	HV-16108A1/A2 HV-16116A1/A2	A	2	Containment isolation
RBCW	M-187	HV-18781A1/A2/B1/B2 HV-18782A1/A2/B1/B2 HV-18791A1/A2/B1/B2 HV-18792A1/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 4.2.1.8 acceptance criteria are 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

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