2.8.2 Main Steam System

1.0 Description

The main steam system (MSS) is a safety-related system. It transports steam from the steam generators to the turbine generator during normal operations. The MSS also isolates the steam generators and the safety-related portion of MSS from the non-safety-related portion during design basis accidents. The main steam pipe lines from the steam generators to and including the fixed seismic restraints downstream of the main steam isolation valves (MSIVs) are safety related. The main steam lines downstream of the fixed seismic restraints to the turbine generator are non-safety-related.

The MSS provides the following safety-related functions:

- The MSS isolates the steam generators and associated portion of main steam lines.
- The MSS provides residual heat removal by venting steam to the atmosphere via the main steam relief trains (MSRTs) and the main steam safety valves (MSSVs).

The MSS provides the following non-safety-related functions:

- The MSS and the turbine bypass system provide the capability to dump steam to the main condenser.

2.0 Arrangement

2.1 The functional arrangement of the MSS is as shown in Figure 2.8.2-1—MSS Functional Arrangement.

2.2 The location of the MSS equipment is as listed in Table 2.8.2-1—MSS Equipment Mechanical Design.

2.3 Physical separation exists between divisions of the MSS.

3.0 Mechanical Design Features

3.1 Equipment listed in Table 2.8.2-1 as ASME Code Section III is designed and tested in accordance with ASME Code Section III.

3.2 Piping indicated in Figure 2.8.2-1 as ASME Code Section III is designed and tested in accordance with ASME Code Section III.

3.3 Equipment identified as Seismic Category I in Table 2.8.2-1 can withstand a design basis seismic load without loss of safety function as listed in Table 2.8.2-1.

3.4 Supports for piping shown as ASME Section III on Figure 2.8.2-1 will be designed in accordance with ASME Section III.

3.5 Specifications exist for components listed as ASME Section III in Table 2.8.2-1.

3.6 Specifications exist for piping shown as ASME Section III on Figure 2.8.2-1.

3.7 Specifications exist for supports for piping shown as ASME Section III on Figure 2.8.2-1.

4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Table 2.8.2-2—MSS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed in Table 2.8.2-2.

4.2 The MSS equipment controls are provided in the MCR and the RSS as listed in Table 2.8.2-2.

4.3 Actuators listed as being controlled by a priority actuation and control system (PACS) module in Table 2.8.2-2 are controlled by a PACS module.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.8.2-2 are powered from the Class 1E division as listed in Table 2.8.2-2 in a normal or alternate feed condition.

5.2 Each MSSV is spring loaded to close. Each main steam relief isolation valve fails closed on loss of electric power to the valve actuator. Each MSIV fails closed on loss of hydraulic pressure or loss of electric power to the actuator. Each turbine bypass valve fails closed on loss of power. Other valves listed in Table 2.8.2-2 fail as-is on loss of power.

6.0 Environmental Qualifications

6.1 Electrical drivers for equipment listed in Table 2.8.2-2 for harsh environment can perform the safety function in Table 2.8.2-1 following exposure to the design basis environments for the time required.

7.0 Equipment and System Performance

7.1 Class 1E valves listed in Table 2.8.2-2 can perform the function listed in Table 2.8.2-1 under system design conditions.

7.2 Each MSSV rated capacity is 1,422,073 lbm/hr. For the MSSV with the lower setpoint of 1460 psig, the rated capacity is at relieving pressure ≤1504 psig (1460 psig + 3%). For the MSSV with the higher setpoint of 1490 psig, the rated capacity is at relieving pressure ≤ 1535 psig (1490 psig + 3%). There are two MSSVs per main steam line.

7.3 Each MSRT rated capacity is 2,844,146 lbm/hr at valve inlet static pressure of 1370 psig. With pressure measurement uncertainty of 30 psi, the maximum relieving pressure is 1400 psig. There is one MSRT per main steam line.

7.4 MSRIV maximum stroke time for opening is 1.8 seconds.

7.5 The maximum closure time of the MSIVs is 5 seconds after signal.

7.6 The SG steam outlet flow restrictor throat area is 1.39 ft^2 maximum.

8.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria specifies the inspections, tests, analyses, and acceptance criteria for the MSS.

Table 2.8.2-1—MSS Equipment Mechanical Design (2 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	ASME Code Section III	Function	Seismic Category
MSSVs	30LBA11AA191 30LBA12AA191 30LBA21AA191 30LBA22AA191 30LBA31AA191 30LBA32AA191 30LBA41AA191 30LBA42AA191	Safeguard Building 1 Safeguard Building 1 Safeguard Building 1 Safeguard Building 1 Safeguard Building 4 Safeguard Building 4 Safeguard Building 4 Safeguard Building 4	Yes	Open, Close	I
Main Steam Relief Isolation Valves	30LBA13AA001 30LBA23AA001 30LBA33AA001 30LBA43AA001	Safeguard Building 1 Safeguard Building 1 Safeguard Building 4 Safeguard Building 4	Yes	Open, Close	I
Main Steam Relief Control Valves	30LBA13AA101 30LBA23AA101 30LBA33AA101 30LBA43AA101	Safeguard Building 1 Safeguard Building 1 Safeguard Building 4 Safeguard Building 4	Yes	Open, Throttle, Close	I
MSIVs	30LBA10AA002 30LBA20AA002 30LBA30AA002 30LBA40AA002	Safeguard Building 1 Safeguard Building 1 Safeguard Building 4 Safeguard Building 4	Yes	Close	I
Main Steam Warming Isolation Valves	30LBA14AA001 30LBA24AA001 30LBA34AA001 30LBA44AA001	Safeguard Building 1 Safeguard Building 1 Safeguard Building 4 Safeguard Building 4	Yes	Close	I
Main Steam Warming Control Valves	30LBA14AA101	Safeguard Building 1	Yes	Close	I

Table 2.8.2-1—MSS Equipment Mechanical Design (2 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	ASME Code Section III	Function	Seismic Category
	30LBA24AA101 30LBA34AA101 30LBA44AA101	Safeguard Building 1 Safeguard Building 4 Safeguard Building 4			
Turbine Bypass Valves	30MAN11AA051 30MAN13AA051 30MAN21AA051 30MAN23AA051 30MAN31AA051 30MAN33AA051	Turbine Building	N/A	Close	N/A

1) Equipment tag numbers are provided for information only and are not part of the certified design.

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
Main Steam Relief Isolation Valve	30LBA13AA001	Safeguard Building 1	1^N, 2^N, 3^N, 4^N 2^A, 1^A, 4^A, 3^A	yes	yes	Pos./ N/A	Open-Close/ Open-Close
Main Steam Relief Isolation Valve	30LBA23AA001	Safeguard Building 1	1^N, 2^N, 3^N, 4^N 2^A, 1^A, 4^A, 3^A	yes	yes	Pos./ N/A	Open-Close/ Open-Close
Main Steam Relief Isolation Valve	30LBA33AA001	Safeguard Building 4	1^N, 2^N, 3^N, 4^N 2^A, 1^A, 4^A, 3^A	yes	yes	Pos./ N/A	Open-Close/ Open-Close
Main Steam Relief Isolation Valve	30LBA43AA001	Safeguard Building 4	1^N, 2^N, 3^N, 4^N 2^A, 1^A, 4^A, 3^A	yes	yes	Pos./ N/A	Open-Close/ Open-Close
Main Steam Relief Control Valve	30LBA13AA101	Safeguard Building 1	1^N 2^A	yes	yes	Pos./ N/A	Open-Throttle-Close/Open-Throttle-Close
Main Steam Relief Control Valve	30LBA23AA101	Safeguard Building 1	2^N 1^A	yes	yes	Pos./ N/A	Open-Throttle-Close/Open-Throttle-Close
Main Steam Relief Control Valve	30LBA33AA101	Safeguard Building 4	3^N 4^A	yes	yes	Pos./ N/A	Open-Throttle-Close/Open-Throttle-Close
Main Steam Relief	30LBA43AA1	Safeguard	4^N	yes	yes	Pos./ N/A	Open-Throttle-

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
Control Valve	01	Building 4	3^{A}				Close/Open-Throttle-Close
MSIV	30LBA10AA002	Safeguard Building 1	1^{N}, 2^{N}, 3^{N}, 4^{N} 2^{A} ,1^{A}, 4^{A}, 3^{A}	yes	yes	Pos./ N/A	Close/Close
MSIV	30LBA20AA002	Safeguard Building 1	1^{N}, 2^{N}, 3^{N}, 4^{N} 2^{A} ,1^{A}, 4^{A}, 3^{A}	yes	yes	Pos./ N/A	Close/Close
MSIV	30LBA30AA002	Safeguard Building 4	1^{N}, 2^{N}, 3^{N}, 4^{N} 2^{A} ,1^{A}, 4^{A}, 3^{A}	yes	yes	Pos./ N/A	Close/Close
MSIV	30LBA40AA002	Safeguard Building 4	1^{N}, 2^{N}, 3^{N}, 4^{N} 2^{A} ,1^{A}, 4^{A}, 3^{A}	yes	yes	Pos./ N/A	Close/Close
Main Steam Warming Isolation Valve	30LBA14AA001	Safeguard Building 1	1^{N} 2^{A}	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Isolation Valve	30LBA24AA001	Safeguard Building 1	2^{N} 1^{A}	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Isolation Valve	30LBA34AA001	Safeguard Building 4	3^{N} 4^{A}	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Isolation Valve	30LBA44AA001	Safeguard Building 4	4^{N}	yes	yes	Pos./ N/A	Close/ N/A

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
			3^A				
Main Steam Warming Control Valve	30LBA14AA101	Safeguard Building 1	3^N 4^A	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Control Valve	30LBA24AA101	Safeguard Building 1	4^N 3^A	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Control Valve	30LBA34AA101	Safeguard Building 4	1^N 2^A	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Warming Control Valve	30LBA44AA101	Safeguard Building 4	2^N 1^A	yes	yes	Pos./ N/A	Close/ N/A
Main Steam Line Pressure Transmitter	30LBA10 CP811	Safeguard Building 1	1^N 2^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA10 CP821	Safeguard Building 1	2^N 1^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA10 CP831	Safeguard Building 1	3^N 4^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA10 CP841	Safeguard Building 1	4^N 3^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA20 CP811	Safeguard Building 1	1^N 2^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA20 CP821	Safeguard Building 1	2^N 1^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA20 CP831	Safeguard Building 1	3^N 4^A	yes	N/A	Pressure/Pressure	N/A / N/A

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
Main Steam Line Pressure Transmitter	30LBA20 CP841	Safeguard Building 1	4^N 3^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA30CP811	Safeguard Building 4	1^N 2^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA30CP821	Safeguard Building 4	2^N 1^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA30CP831	Safeguard Building 4	3^N 4^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA30CP841	Safeguard Building 4	4^N 3^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA40CP811	Safeguard Building 4	1^N 2^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA40CP821	Safeguard Building 4	2^N 1^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA40CP831	Safeguard Building 4	3^N 4^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Pressure Transmitter	30LBA40CP841	Safeguard Building 4	4^N 3^A	yes	N/A	Pressure/Pressure	N/A / N/A
Main Steam Line Activity Sensor	30LBA10 CR811	Safeguard Building 1	1^N 2^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA10 CR821	Safeguard Building 1	2^N 1^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA10 CR831	Safeguard Building 1	3^N 4^A	yes	N/A	Radiation/ N/A	N/A / N/A

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
Main Steam Line Activity Sensor	30LBA10 CR841	Safeguard Building 1	4^N 3^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA20 CR811	Safeguard Building 1	1^N 2^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA20 CR821	Safeguard Building 1	2^N 1^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA20 CR831	Safeguard Building 1	3^N 4^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA20 CR841	Safeguard Building 1	4^N 3^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA30CR811	Safeguard Building 4	1^N 2^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA30CR821	Safeguard Building 4	2^N 1^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA30CR831	Safeguard Building 4	3^N 4^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA30CR841	Safeguard Building 4	4^N 3^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA40CR811	Safeguard Building 4	1^N 2^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA40CR821	Safeguard Building 4	2^N 1^A	yes	N/A	Radiation/ N/A	N/A / N/A
Main Steam Line Activity Sensor	30LBA40CR831	Safeguard Building 4	3^N 4^A	yes	N/A	Radiation/ N/A	N/A / N/A

Table 2.8.2-2—MSS Equipment I&C and Electrical Design (6 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls
Main Steam Line Activity Sensor	30LBA40CR841	Safeguard Building 4	4^{N} 3^{A}	yes	N/A	Radiation/ N/A	N/A / N/A

1) Equipment tag numbers are provided for information only and are not part of the certified design.
2) ^{N} denotes the division the component is normally powered from. ^{A} denotes the division the component is powered from when alternate feed is implemented.

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria (5 Sheets)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
2.1	The functional arrangement of the MSS is as shown on Figure 2.8.2-1.	Inspections of the as-built system as shown on Figure 2.8.2-1 will be conducted.	The as-built MSS conforms with the functional arrangement as shown in Figure 2.8.2-1.
2.2	The location of the MSS equipment is as listed in Table 2.8.2-1.	An inspection will be performed of the location of the equipment listed in Table 2.8.2-1.	The equipment listed in Table 2.8.2-1 is located as listed in Table 2.8.2-1.
2.3	Physical separation exists between divisions of the safety-related portion of the MSS.	An inspection will be performed to verify that the safety-related portions of the divisions of the MSS are located in separate valve rooms in Safeguard Buildings 1 and 4.	The divisions of the safety-related portion of the MSS are located in separate valve rooms in Safeguard Buildings 1 and 4.
3.1	The components designated as ASME Code Section III in Table 2.8.2-1 are designed to ASME Code Section III requirements.	Inspections will be conducted of ASME design, NDE, and hydrostatic test reports for the components listed as ASME Code Section III in Table 2.8.2-1.	A report exists and concludes that the components listed as ASME Code Section III in Table 2.8.2-1 have been designed and hydrostatically tested in accordance ASME Code Section III requirements.
3.2a	The piping identified as being within the ASME Code Section III boundary as indicated in Figure 2.8.2-1 has been designed in accordance with ASME Code Section III requirements including seismic loads.	Analysis of the as-designed piping will be performed in accordance with ASME Code Section III requirements for the piping indicated in Figure 2.8.2-1.	ASME Code Section III stress reports exist and conclude that the as-designed piping identified as ASME Code Section III in Figure 2.8.2-1 meets ASME Code Section III design requirements.

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria (5 Sheets)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
3.2b	The piping identified as being within the ASME Code Section III boundary as indicated in Figure 2.8.2-1 has been inspected and hydrostatically tested in accordance with ASME Code Section III.	Inspections will be conducted of the as-built piping as indicated in Figure 2.8.2-1 for the following: Welding has been performed per ASME Code Section III. Hydrostatic testing per ASME Code Section III was performed.	A report exists and concludes that the piping as indicated in Figure 2.8.2-1 as ASME Code Section III has been welded in accordance with ASME Code Section III welding requirements. A report exists and concludes that the piping as indicated in Figure 2.8.2-1 as ASME Code Section III has been hydrostatically tested in accordance with ASME Code Section III requirements.
3.3	Equipment identified as Seismic Category I in Table 2.8.2-1 can withstand a design basis seismic load without loss of safety function as listed in Table 2.8.2-1.	Type tests, tests, analyses, or a combination of tests and analyses will be performed on the equipment designated as Seismic Category I in Table 2.8.2-1.	The equipment designated as Seismic Category I in Table 2.8.2-1 can withstand a design basis seismic load without loss of safety function.
3.4	Supports for piping shown as ASME Section III on Figure 2.8.2-1 will be designed per ASME Section III.	An analysis will be performed.	a. Supports for piping shown as ASME Section III on Figure 2.8.2-1 are designed to ASME Section III. b. Snubbers have been identified, including those analyzed for fatigue for piping shown as ASME Section III on Figure 2.8.2-1. c. Support mass is less than ten percent of the adjacent pipe span for piping shown as ASME Section III on Figure 2.8.2-1.
3.5	Specifications exist for components listed as ASME Section III in Table 2.8.2-1.	An inspection will be performed.	Specifications exist for components listed as ASME Section III in Table 2.8.2-1.
3.6	Specifications exist for piping shown as ASME Section III on Figure 2.8.2-1.	An inspection will be performed.	Specifications exist for piping identified as ASME Section III on Figure 2.8.2-1.

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria (5 Sheets)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
3.7	Specifications exist for supports for piping shown as ASME Section III on Figure 2.8.2-1	An inspection will be performed.	Specifications exist for supports for piping shown as ASME Section III on Figure 2.8.2-1.
4.1	Displays exist or can be retrieved in the MCR and the RSS as identified in Table 2.8.2-2.	Inspections will be performed for the existence or retrievability of the displays in the MCR or the RSS as listed in Table 2.8.2-2.	The displays listed in Table 2.8.2-2 as being retrieved in the MCR can be retrieved in the MCR. The displays listed in Table 2.8.2-2 as being retrieved in the RSS can be retrieved in the RSS.
4.2	Controls exist in the MCR and the RSS as identified in Table 2.8.2-2.	Tests will be performed for the existence of control signals from the MCR and the RSS to the equipment listed in Table 2.8.2-2.	The controls listed in Table 2.8.2-2 as being in the MCR exist in the MCR. The controls listed in Table 2.8.2-2 as being in the RSS exist in the RSS.
4.3	Actuators listed as being controlled by a PACS module in Table 2.8.2-2 are controlled by a PACS module.	An operational test will be performed using test signals for the actuators being controlled by a PACS module as listed in Table 2.8.2-2. An inspection will be performed on the actuation of the actuator.	The actuators listed as being controlled by a PACS module in Table 2.8.2-2 actuate to the state requested by the signal.
5.1	The components designated as Class 1E in Table 2.8.2-2 are powered from the Class 1E division as listed in Table 2.8.2-2 in a normal or alternate feed condition.	Testing will be performed for components designated as Class 1E in Table 2.8.2-2 by providing a test signal in each normally aligned division. Testing will be performed for components designated as Class 1E in Table 2.8.2-2 by providing a test signal in each division with the alternate feed aligned to the divisional pair.	The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 2.8.2-2. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E component identified in Table 2.8.2-2.

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria (5 Sheets)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
5.2	Each main steam relief isolation valve fails closed on loss of electric power to the valve actuator. Each MSIV fails closed on loss of hydraulic pressure or loss of electric power to the actuator. Each turbine bypass valve fails closed on loss of electric power to the valve actuator. Other valves listed in Table 2.8.2-2 fail as-is on loss of power.	Testing will be performed for each main steam relief isolation valve to fail closed on loss of power to the actuator, for each MSIV to fail closed on loss of hydraulic pressure or loss of electric power to the actuator, and each turbine bypass valve to fail closed on loss of electric power to the valve actuator. Testing will be performed for the other valves listed in Table 2.8.2-2 to fail as-is on loss of power.	Each main steam relief isolation valve fails closed on loss of electric power to the valve actuator. Each MSIV fails closed on loss of hydraulic pressure or loss of electric power to the actuator. Each turbine bypass valve fails closed on loss of electric power to the valve actuator. Following loss of power, the other valves listed in Table 2.8.2-2 fail as-is.
6.1	Components listed as Class 1E in Table 2.8.2-2 that are designated as harsh environment will perform the function listed in Table 2.8.2-1 in the environments that exist before and during the time required to perform their safety function.	6.1a. Type tests, tests, analyses, or a combination of tests and analyses will be performed to demonstrate the ability of the equipment listed for harsh environment in Table 2.8.2-2 to perform the function listed in Table 2.8.2-1 for the environmental conditions that could occur before and during a design basis accident. 6.1b. For equipment listed for harsh environment in Table 2.8.2-2, an inspection will be performed of the as-installed Class 1E equipment and the associated wiring, cables, and terminations.	6.1a. The Class 1E equipment listed for harsh environment in Table 2.8.2-2 can perform the function listed in Table 2.8.2-1 before and during design basis accidents for the time required to perform the listed function. 6.1b. Inspection concludes the as-installed Class 1E equipment and associated wiring, cables, and terminations as listed in Table 2.8.2-2 for harsh environment conform with the design.
7.1	Class 1E valves listed in Table 2.8.2-2 perform the function listed in Table 2.8.2-1 under system conditions.	Tests and analyses or a combination of tests and analyses will be performed to demonstrate the ability of the valves listed in Table 2.8.2-2 to change position as listed in Table 2.8.2-1 under system design conditions.	The as-installed valve changes position as listed Table 2.8.2-1 under system design conditions.

Table 2.8.2-3—MSS Inspections, Tests, Analyses, and Acceptance Criteria (5 Sheets)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
7.2	MSSVs provide relief capacity.	Testing and analysis will be performed.	Each MSSV provides relief capacity ≥ 1,422,073 lbm/hr at ≤ 1504 psig for the first valve and ≤ 1535 psig for the second valve.
7.3	MSRTs provide relief capacity.	Testing and analysis will be performed.	Each MSRT provides relief capacity ≥ 2,844,146 lbm/hr at ≤ 1414.7 psia.
7.4	MSRIVs open.	Testing will be performed.	MSRIVs open within 1.8 seconds.
7.5	MSIVs close.	Testing will be performed.	MSIVs close within 5 seconds after signal.
7.6	SG steam outlet flow restrictor throat area.	Inspection will be performed for each SG outlet restrictor.	Each SG steam outlet flow restrictor throat area ≤ 1.39 ft^2