

SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 69-7994

SRP Section: 03.09.06 – Functional Design Qualification and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints

Application Section: 3.9.6

Date of RAI Issue: 07/14/2015

Question No. 03.09.06-9

APR1400 Design Control Document (DCD) Tier 2, Table 3.9-13, "Inservice Testing of Safety-Related Pumps and Valves," specifies inservice testing (IST) activities and frequencies for pumps and valves in the IST program for the APR1400 reactor. NRC Standard Review Plan Section 3.9.6 specifies in its acceptance criteria that the IST program description should satisfy the IST activities and frequencies for pumps and valves provided in the applicable subsection of the ASME OM Code. The NRC staff requests that the APR1400 design certification applicant modify Table 3.9-13 to be consistent with the NRC regulations in 10 CFR 50.55a and guidance for IST programs in NUREG-1482 (as referenced in Section 3.9.6 of the APR1400 DCD Tier 2). In particular, the NRC staff considers the following changes to Table 3.9-13 to be appropriate. The applicant should evaluate all pumps and valves in Table 3.9-13 for appropriate changes similar to the specific pump and valve examples listed below.

1. Pump information should include the pump identification number, ASME OM Code Group, and specific test (Group A, Group B, and Comprehensive) and its frequency depending on OM Code Group.
2. Valve information should include the valve safety position (open, closed, or open/closed).
3. Relief valves should be specified as active Category A/C valves with position indication requirements (as applicable) in addition to other ASME OM Code, Subsection ISTC, requirements indicated in the IST table. See, for example, relief valve CS-1005 on page 3.9-173.
4. Manual valves should include position indication requirements (as applicable) in addition to other ASME OM Code, Subsection ISTC, requirements indicated in the IST table. See, for example, manual valve SI-293 on page 3.9-157.
5. Check valves should be categorized as active valves in the IST program because of their operating characteristics as indicated in NUREG-1482 (Revision 2), Section 4.1, "Check Valves." In addition, check valves should be tested in both the open and close directions. See, for example, check valve CS-1001 on page 3.9-173.

6. The Note at the end of paragraph (h) on page 3.9-227 should justify pump curve testing to assess pump degradation with clarification of its reference to the provisions in Subsection 3.9.6.1.
7. Paragraph (i) on page 3.9-227 references Figure 3.9-15, "Typical Inservice Testing Connections," and indicates that these typical test configurations constitute design requirements for the affected pump or valve. Paragraph (i) and Figure 3.9-15 should indicate the full set of IST program tests for pumps (such as Group A, Group B, and Comprehensive Tests) and valves (such as flow tests to periodically verify design-basis capability).

Response

A review of Table 3.9-13 was performed to correct all discrepancies noted and to keep consistency with the ASME OM Code requirements. The COL applicant will provide the full description of the IST program in accordance with COL Item 3.9(4). Table 3.9-13 (IST of Safety Related Pumps and Valves) will also be finalized by the COL applicant at that time based on the applicable OM Code. Therefore, it is not necessary or meaningful to modify Table 3.9-13 at this time during the DC stage to include all of the applicable OM Code requirements.

Supplemental Response

This supplemental response is to provide additional information pertaining to the changes that were previously proposed and are in response to the staff's review comments communicated to KHNP in a call conducted on November 17, 2015.

1. Table 3.9-13 will be revised to include the pump identification number, a description of the pump function and the applicable ASME OM Code Group for pumps within the scope of the IST program for the APR1400.
2. Table 3.9-13 will be revised to include the safety position of each valve.
3. The following relief valves in the safety injection system (SIS) and the shutdown cooling systems (SCS), (SI-166, SI-169, SI-179, SI-187, SI-188, SI-189, SI-211, SI-221, SI-231, SI-241, SI-285, SI-286, SI-287, SI-289, SI-292, SI-409, SI-417, SI-422, SI-423, SI-439, SI-449, SI-450, SI-461, SI-462, SI-466, SI-467, SI-468, SI-469, and SI-473) are specified as OM Category C with OM Code Appendix I testing (RVT) since they do not have a leak rate requirement. Relief valve SI-474 is OM category A/C with RVT and valve leakage rate test (LT) in Table 3.9-13. However, valve remote position verification (LPV) is not needed because those valves do not have remote position indication capability. All relief valves in the SIS/SCS are self-actuating, spring loaded type, in response to system pressure.

Valves in the RG, CS, IW, CC, SX, and FC systems (RG-1421, CS-1005, CS-1021, CS-1022, CS-1023, CS-1024, IW-1003, CC-1031, CC-1032, CC-1033, CC-1034, CC-1035, CC-1036, CC-1111, CC-1112, CC-1515, CC-1547, CC-1575, CC-1215, CC-1569, CC-1107, CC-1269, CC-1516, CC-1548, CC-1247, CC-1248, CC-1270, CC-1576, CC-1216, CC-1570, CC-1108, SX-1041, SX-1042, SX-1043, SX-1044, SX-1045, SX-1046, FC-1013,

and FC-1014) are OM Category C valves with RVT requirements specified in Table 3.9-13. LPV requirements are not needed since the valves do not have remote position indication capability.

Main steam safety valves (MS-1315, MS-1316, MS-1317, MS-1318, MS-1319, and MS-1320) will be tested to check the leakage through those valves according to ASME OM Code Table ISTC-3500-1. However, LPV for the MS safety valves is not required because the valves do not have remote position indication capability. The MS valves will be self-actuated at an established set pressure.

4. Since manual valves (SD-1113, SD-1114, SI-293, CS-1013, FC-1143, and FC-1144) do not have remote position indication capability, LPV testing requirements are not needed. Valve SI-293 is used for filling SITs and is locked closed during both normal operation and accident.

5.

- a. Valve stroke exercise requirement (S) is not specified for CV-363, CV-747 and CV-835. These valves are containment isolation valves (CIVs) and installed in the shutdown purification line, the charging line, and the RCP seal injection line, respectively. The normal position for CV-363 is closed during plant power operation and it is opened for shutdown purification operation during cold shutdown. Valves CV-747 and CV-835 are normally in the open position during plant power operation and are closed during cold shutdown and refueling. These three check valves are opened and closed intermittently during plant operation and, therefore, the valve stroke exercise requirement does not need to be specified in accordance with ASME OM Code, Paragraph ISTC-3550. The reverse flow exercise is currently specified for these valves as shown in Table 3.9-13 (refer to pages 32 and 35 of 95).

Main feedwater check valves (FW-1035, FW-1036, FW-1037, FW-1039, FW-1040, FW-1042, FW-1043, FW-1044, FW-1046, and FW-1047) are located on the feedwater inlet lines to the steam generators. These check valves remain open during power operation to maintain steam generator level and have a safety function to close to preclude blowdown of steam generator following a pipe rupture upstream of check valves. These valves are in the open position during plant power operation, and they are closed during shutdown and refueling when there is no feedwater flow needed. Since, they are exercised at least once during the operation cycle, the valve stroke exercise requirement does not need to be specified for these check valves in accordance with ASME OM Code, Paragraph ISTC-3550. The reverse flow exercise is currently specified for these valves shown in Table 3.9-13 (Refer to page 56, 57 of 90).

- b. The valve leakage rate test requirement (LT) for FW-1039, FW-1040, FW-1046, and FW-1047 will be deleted since it is not required. Though not a requirement by the ASME OM Code, valves AF-1007A/B and AF-1008A/B will be tested to check the leakage through these valves for the enhancement of AF system reliability.
- c. There are no check valves specified in Table 3.9-13 that have remote position indication capability.

6.
 - a. "P-Piston" in Note (b) will be revised to "P- air operated with piston."
 - b. Valves (SI-612, SI-619, SI-622, SI-629, SI-632, SI-639, SI-642, SI-649, SI-661, and SI-670) are not active valves and are maintained in the closed position (locked closed) during normal operation and accident. Therefore, the valve stroke time test requirement (MT) is not needed for these valves.
 - c. FS requirement is specified for SD-0006, AF-0035, AF-0036, AF-0037, AF-0038, and SA-0001, but not for SD-0007.
 - d. These valves are category B. However, these valves will be additionally tested to check the gross leakage during refueling outage for system enhancement. Detailed description of the leakage test specified for these valves is shown in Note 39 of Table 3.9-13, (refer to page 93 of 95).
7. If ASME OM-ISTB pump tests cannot be performed on the CCW or ESW pumps due to an inability to repeat the pump tests at a single-point flow condition, pump curve testing will be used in accordance with ASME OM Code Case OMN-16, Revision 1. Subsection 3.9.6.2 will be revised to include justification and provisions for pump curve testing and the Note at the end of paragraph (h) will be revised to correct the reference to the provisions for pump curve testing.

The following items are to address additional comments that were noted by the staff:

8. Design requirements for the IST program for pumps and valves are listed in Table 3.9-13. Figure 3.9-15, which is referenced in Paragraph (i) on page 3.9-227, shows a typical test configuration for pumps and valves; however, it is not applicable to the APR1400. Therefore, Figure 3.9-15 and the associated parts will be deleted.
9. The Note (23) on page 89 of 95 in Table 3.9-13 will be revised to clarify the position of valves CV-362 and CV-363 during normal operation.
10. Table 3.9-13 will be revised to update all of the pumps and valve information to be consistent with the comments made in the various sections above. In addition, some of the DCD Tier 1 tables will be updated to address the inconsistencies found in the specified valve safety positions.

Impact on DCD

DCD Tier 2 Table 3.9-13 will be revised as indicated in Attachment 1 (Items 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10).

DCD Tier 2 Section 3.9.6.2 will be revised as indicated in Attachment 2 (Item 7).

DCD Tier 1 Tables 2.4.1-2, 2.4.2-2, 2.4.3-2, 2.4.4-2, 2.4.5-2, 2.7.1.8-2, 2.7.2.1-2, 2.7.2.2-2, 2.7.2.6-2, 2.7.4.3-2 and 2.11.2-2 will be revised as indicated in Attachment 3 (Item 10).

DCD Tier 2 Figure 3.9-15 will be deleted as indicated in Attachment 4 (Item 8).

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical and Environmental Report.

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Table 3.9-13 (1 of 95)

Inservice Testing of Safety-Related Pumps and Valves

Pump No	Pump Description	Pump Type	Safety Class	OM Code Group	Test Parameter ^(h)	Test Freq	Acceptance Criteria	Test Config. ⁽⁺⁾	Figure No.
CC-PP01A	Component Cooling Water pump 1A	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	16	9.2.2-1
CC-PP01B	Component Cooling Water pump 1B	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	16	9.2.2-1
CC-PP02A	Component Cooling Water pump 2A	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	16	9.2.2-1
CC-PP02B	Component Cooling Water pump 2B	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	16	9.2.2-1
CC-PP03A	Component Cooling Water makeup pump 3A	Centrifugal	3	B	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	22	9.2.2-1
CC-PP03B	Component Cooling Water makeup pump 3B	Centrifugal	3	B	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	22	9.2.2-1
SI-PP02A	Safety Injection pump 1	Centrifugal	2	B	DP, SPs, SPo , Q, V (40)	3 mo	Table ISTB-5100-1 in ASME OM Code	18	6.3.2-1
SI-PP02B	Safety Injection pump 2	Centrifugal	2	B	DP, SPs, SPo , Q, V (40)	3 mo	Table ISTB-5100-1 in ASME OM Code	18	6.3.2-1
SI-PP02C	Safety Injection pump 3	Centrifugal	2	B	DP, SPs, SPo , Q, V (40)	3 mo	Table ISTB-5100-1 in ASME OM Code	18	6.3.2-1
SI-PP02D	Safety Injection pump 4	Centrifugal	2	B	DP, SPs, SPo , Q, V (40)	3 mo	Table ISTB-5100-1 in ASME OM Code	18	6.3.2-1
SI-PP01A	Shutdown Cooling pump 1	Centrifugal vertical	2	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5100-1 in ASME OM Code	19	6.3.2-1
SI-PP01A	Shutdown Cooling pump 2	Centrifugal vertical	2	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5100-1 in ASME OM Code	19	6.3.2-1
CS-PP01A	Containment Spray pump 1	Centrifugal	2	B	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	19	6.2.2-1
CS-PP01B	Containment Spray pump 2	Centrifugal	2	B	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	19	6.2.2-1
SX-PP01A	Essential Service Water pump 1A	Vertical line shaft centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	17	9.2.1-1
SX-PP01B	Essential Service Water pump 1B	Vertical line shaft centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	17	9.2.1-1
SX-PP02A	Essential Service Water pump 2A	Vertical line shaft centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	17	9.2.1-1
SX-PP02B	Essential Service Water pump 2B	Vertical line shaft centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	17	9.2.1-1
FC-PP01A	Spent Fuel Pool cooling pump A	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.1.3-1
FC-PP01B	Spent Fuel Pool cooling pump B	Centrifugal	3	A	DP, SPs, SPo , Q, V	3 mo	Table ISTB-5121-1 in ASME OM Code	30	9.1.3-1
AF-PP02A	Motor Driven AFW pump PP02A	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	21	10.4.9-1

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Table 3.9-13 (2 of 95)

Pump No	Pump Description	Pump Type	Safety Class	OM Code Group	Test Parameter ^(h)	Test Freq	Acceptance Criteria	Test Config. ⁽⁺⁾	Figure No.
AF-PP01A	TD AFW pump PP01A	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	21	10.4.9-1
AF-PP02B	MD AFW pump PP02B	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	21	10.4.9-1
AF-PP01B	TD AFW pump PP01B	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	21	10.4.9-1
WO-PP01A	ECW pump PP01A	Centrifugal horizontal	3	A	N, DP, Q, V, P _D	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
WO-PP02A	ECW pump PP02A	Centrifugal horizontal	3	A	N, DP, Q, V, P _D	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
WO-PP03A	ECW makeup pump PP03A	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
WO-PP01B	ECW pump PP01B	Centrifugal horizontal	3	A	N, DP, Q, V, P _D	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
WO-PP02B	ECW pump PP02B	Centrifugal horizontal	3	A	N, DP, Q, V, P _D	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
WO-PP03B	ECW makeup pump PP03B	Centrifugal horizontal	3	B	N, DP, Q	3 mo	Table ISTB-5121-1 in ASME OM Code	20	9.2.7-1
DO-PP01A/02A	DG 1 fuel oil transfer pump 01A/02A	Centrifugal horizontal	3	B	Note 37	Note37	Table ISTB-5121-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP01B/02B	DG 2 fuel oil transfer pump 01B/02B	Centrifugal horizontal	3	B	Note 37	Note37	Table ISTB-5121-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP01C/02C	DG 3 fuel oil transfer pump 01C/02C	Centrifugal horizontal	3	B	Note 37	Note37	Table ISTB-5121-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP01D/02D	DG 4 fuel oil transfer pump 01D/02D	Centrifugal horizontal	3	B	Note 37	Note37	Table ISTB-5121-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP022A	DG 1 motor-driven fuel oil feed pump	Rotary (gear) horizontal	3	B	Note 37	Note37	Table ISTB-5321-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP022B	DG 2 motor-driven fuel oil feed pump	Rotary (gear) horizontal	3	B	Note 37	Note37	Table ISTB-5321-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP022C	DG 3 motor-driven fuel oil feed pump	Rotary (gear) horizontal	3	B	Note 37	Note37	Table ISTB-5321-1 in ASME OM Code	Note 37	9.5.4-1
DO-PP022D	DG 4 motor-driven fuel oil feed pump	Rotary (gear) horizontal	3	B	Note 37	Note37	Table ISTB-5321-1 in ASME OM Code	Note 37	9.5.4-1

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Table 3.9-13 (3 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
RC-200	PZR POSRV	POS	SA EL	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-201	PZR POSRV	POS	SA EL	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-202	PZR POSRV	POS	SA EL	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-203	PRZ POSRV	POS	SA EL	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-120	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-121	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-122	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-123	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-124	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO

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Table 3.9-13 (4 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
RC-125	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-126	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-127	PZR POSRV Motor Operated Isolation Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-130	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-131	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-132	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-133	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-134	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO

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Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
RC-135	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-136	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-137	PZR POSRV Motor Operated Pilot Valve	GL	EL	1	A		Closed	LT S LPV MT	RO
RC-300	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-301	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-302	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-303	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-304	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-305	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-306	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO

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Table 3.9-13 (6 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
RC-307	PZR POSRV Spring Loaded Pilot Valve	RV	SA	1	A/C		Open/ Closed	LT RVT LPV	RO
RC-0385	POSRV discharge	3W	EL	3	B			S MT LPV	RO ⁽⁴⁶⁾ RO ⁽⁴⁶⁾ 2 yr
RC-0386	POSRV discharge	3W	EL	3	B			S MT LPV	RO ⁽⁴⁶⁾ RO ⁽⁴⁶⁾ 2 yr
RC-1401	POSRV discharge vacuum relief	RV	SA	3	C			RVT	2 yr
RC-1402	POSRV discharge vacuum relief	RV	SA	3	C			RVT	2 yr
RC-1403	POSRV discharge vacuum relief	RV	SA	3	C			RVT	2 yr
RC-1404	POSRV discharge vacuum relief	RV	SA	3	C			RVT	2 yr
RG-0410	PZR gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0411	PZR gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0412	PZR gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr

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Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
RG-0413	PZR gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0414	Reactor vessel gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0415	Reactor vessel gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0416	Reactor vessel gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0417	Reactor vessel gas vent	GL	S	1	B		Open/Closed	S MT FS LPV	CS ⁽¹²⁾ CS ⁽¹²⁾ CS ⁽¹²⁾ 2 yr
RG-0418	RCGV discharge to reactor drain tank vent	GL	S	2	B	P	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
RG-0419	RCGV discharge to IRWST vent	GL	S	2	B		Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (8 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
RG-0420	RCGV discharge to IRWST vent	GL	S	2	B		Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
RG-1421	RCGV vacuum relief	RV	SA	3	C		Open/Closed	RVT	2 yr
SI-100	IRWST return line check	CK	SA	2	A/C	CIC	Open/Closed	S RF LT	3 mo 3 mo 2 yr
SI-101	IRWST return line check	CK	SA	2	A/C	CIC	Open/Closed	S RF LT	3 mo 3 mo 2 yr
SI-113	SI line check	CK	SA	2	C	CIN	Open/Closed	S RF	RO ⁽¹⁶⁾ RO ⁽¹⁶⁾
SI-123	SI line check	CK	SA	2	C	CIN	Open/Closed	S RF	CS ⁽¹⁷⁾ RO ⁽¹⁷⁾
SI-133	SI line check	CK	SA	2	C	CIN	Open/Closed	S RF	RO ⁽¹⁶⁾ RO ⁽¹⁶⁾
SI-143	SI line check	CK	SA	2	C	CIN	Open/Closed	S RF	CS ⁽¹⁷⁾ RO ⁽¹⁷⁾
SI-157	CS pump suction check	CK	SA	2	C		Open/Closed	S RF	3 mo 3 mo
SI-158	CS pump suction check	CK	SA	2	C		Open/Closed	S RF	3 mo 3 mo

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Table 3.9-13 (9 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-159	SC pump suction check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo
SI-160	SC pump suction check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo
SI-166	SI hot leg injection line relief	RV	SA	2	C		-	RVT	10 yr
SI-168	SCS line check	CK	SA	2	C		Open /Closed	S RF	CS ⁽¹⁷⁾ 3 mo
SI-169	SCS line relief to RDT	RV	SA	1	C		-	RVT	5 yr
SI-178	SCS line check	CK	SA	2	C		Open /Closed	S RF	CS ⁽¹⁷⁾ 3 mo
SI-179	SCS suction line relief	RV	SA	2	C	CIN	Open	RVT	10 yr
SI-187	SCS test return line relief	RV	SA	2	C		-	RVT	10 yr
SI-188	SCS test return line relief	RV	SA	2	C		-	RVT	10 yr
SI-189	SCS suction line relief	RV	SA	2	C	CIN	Open	RVT	10 yr
SI-211	SIT relief	RV	SA	2	C		-	RVT	10 yr
SI-215	SIT check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽¹⁹⁾ 2 yr (38)
SI-217	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽²⁰⁾ 2 yr (38)
SI-221	SIT relief	RV	SA	2	C		-	RVT	10 yr
SI-225	SIT check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽¹⁹⁾ 2 yr (38)

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Table 3.9-13 (10 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-227	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	CS ⁽²⁰⁾ 2 yr (38)
SI-231	SIT relief	RV	SA	2	C		-	RVT	10 yr
SI-235	SIT check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽¹⁹⁾ 2 yr (38)
SI-237	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽²⁰⁾ 2 yr (38)
SI-241	SIT relief	RV	SA	2	C		-	RVT	10 yr
SI-245	SIT check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RR ⁽¹⁹⁾ 2 yr (38)
SI-247	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	CS ⁽²⁰⁾ 2 yr (38)
SI-285	SI miniflow line relief	RV	SA	2	C		-	RVT	10 yr
SI-286	SI miniflow line relief	RV	SA	2	C		-	RVT	10 yr
SI-287	SCS test return line relief	RV	SA	2	C		-	RVT	10 yr
SI-289	SCS test return line relief	RV	SA	2	C		-	RVT	10 yr
SI-292	SIT fill return line relief	RV	SA	3	C		-	RVT	10 yr
SI-293	SIT fill line isolation	GL	M	2	A	P, CIC	Closed	LT	2 yr

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Table 3.9-13 (11 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-300	IRWST return line isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
SI-301	IRWST return line isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
SI-302	SI combined miniflow line isolation	GT	EL	2	A	CIC	Open	S MT LPV LT	RO ⁽²¹⁾ RO ⁽²¹⁾ 2 yr 2 yr
SI-303	SI combined miniflow line isolation	GL	EL	2	A	CIC	Open	S MT LPV LT	RO ⁽²¹⁾ RO ⁽²¹⁾ 2 yr 2 yr
SI-304	IRWST isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-305	IRWST isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-308	IRWST isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (12 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-309	IRWST isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-310	SDCHX outlet flow isolation	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-311	SDCHX outlet flow isolation	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-312	SDCHX bypass flow control	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-313	SDCHX bypass flow control	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-314	SCS test return line isolation	GL	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-315	SCS test return line isolation	GL	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-321	SI hot leg injection line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-322	Hot leg check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr

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Table 3.9-13 (13 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-331	SI hot leg injection line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-332	Hot leg check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr
SI-340	SCS/CSS pump suction cross connect	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-341	SCS/CSS pump discharge cross connect	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-342	SCS/CSS pump suction cross connect	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-343	SCS/CSS pump discharge cross connect	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-344	SC pump suction isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-346	SC pump suction isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (14 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-347	CS pump suction isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-391	Reactor cavity isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-393	Reactor cavity isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-395	IRWST return line isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-348	CS pump suction isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-404	SI pump discharge check	CK	SA	2	C		Open /Closed	S RF	RO ⁽¹⁶⁾ 3 mo ^(16A)
SI-405	SI pump discharge check	CK	SA	2	C		Open /Closed	S RF	RO ⁽¹⁶⁾ 3 mo ^(16A)
SI-409	SI line relief	RV	SA	2	C		-	RVT	10 yr
SI-417	SI line relief	RV	SA	2	C		-	RVT	10 yr
SI-422	SDCHX header relief	RV	SA	2	C		-	RVT	10 yr
SI-423	SDCHX header relief	RV	SA	2	C		-	RVT	10 yr

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Table 3.9-13 (15 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-424	SI miniflow check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽²²⁾
SI-426	SI miniflow check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽²²⁾
SI-434	SI pump discharge check	CK	SA	2	C		Open /Closed	S RF	RO ⁽¹⁶⁾ 3 mo ^(16A)
SI-439	SI line relief	RV	SA	2	C		-	RVT	10 yr
SI-446	SI pump discharge check	CK	SA	2	C		Open /Closed	S RF	RO ⁽¹⁶⁾ 3 mo ^(16A)
SI-448	SI miniflow check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽²²⁾
SI-449	SI line relief	RV	SA	2	C		-	RVT	10 yr
SI-450	Reactor cavity line relief	RV	SA	2	C		-	RVT	10 yr
SI-451	SI miniflow check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽²²⁾
SI-461	SC line relief	RV	SA	2	C		-	RVT	10 yr
SI-462	SC line relief	RV	SA	2	C		-	RVT	10 yr
SI-466	SC line relief	RV	SA	2	C		-	RVT	10 yr
SI-467	SC line relief	RV	SA	2	C		-	RVT	10 yr
SI-468	SI hot leg injection line relief	RV	SA	2	C		-	RVT	10 yr

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Table 3.9-13 (16 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-469	SCS line relief to RDT	RV	SA	1	C		-	RVT	5 yr
SI-473	check valve leakage line relief	RV	SA	2	C		-	RVT	10 yr
SI-474	SIT fill line relief	RV	SA	2	A/C	CIC	Open	RVT LT	10 yr 2 yr
SI-522	SI hot leg injection line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)
SI-523	SI hot leg injection line check	CK	SA	1	A/C	CIN, PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)
SI-532	SI hot leg injection line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)
SI-533	SI hot leg injection line check	CK	SA	1	A/C	CIN, PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)
SI-540	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)
SI-541	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	CS ⁽¹⁷⁾ 2 yr (38)
SI-542	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	RO ⁽¹⁶⁾ 2 yr (38)

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Table 3.9-13 (17 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-543	SI line check	CK	SA	1	A/C	PIV	Open /Closed	S LT RF	CS ⁽¹⁷⁾ 2 yr (38)
SI-568	SC pump discharge check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽¹⁵⁾
SI-569	SC pump discharge check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo ⁽¹⁵⁾
SI-600	SCS line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-601	SCS line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-602	SI low flow control	GL	EL	2	B	CIN	Open /Closed	S. MT LPV	3 mo 3 mo 2 yr
SI-603	SI low flow control	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-604	SI hot leg injection isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (18 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-605	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-606	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-607	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-608	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-609	SI hot leg isolation	GT	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-611	SIT fill and drain isolation	GL	AD	2	B		Open /Closed	S MT FS LPV	3 mo 3 mo RO ⁽³⁶⁾ 2 yr
SI-612	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr

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Table 3.9-13 (19 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-613	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-614	SIT discharge isolation	GT	EL	1	B		Open /Closed	S MT LPV	CS ⁽²⁴⁾ CS ⁽²⁴⁾ 2 yr
SI-616	SI line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-618	Check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV. LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr
SI-619	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr
SI-621	SIT fill and drain isolation	GL	AD	2	B		Closed	S MT FS LPV	3 mo 3 mo RO ⁽³⁶⁾ 2 yr
SI-622	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr

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Table 3.9-13 (20 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-623	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-624	SIT discharge isolation	GT	EL	1	B		Open /Closed	S MT LPV	CS ⁽²⁴⁾ CS ⁽²⁴⁾ 2 yr
SI-626	SI line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-628	Check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr
SI-629	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr
SI-631	SIT fill and drain isolation	GL	AD	2	B		Closed	S MT FS LPV	3 mo 3 mo RO ⁽³⁶⁾ 2 yr
SI-632	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr

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Table 3.9-13 (21 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-633	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-634	SIT discharge isolation	GT	EL	1	B		Open /Closed	S MT LPV	CS ⁽²⁴⁾ CS ⁽²⁴⁾ 2 yr
SI-636	SI line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-638	Check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr
SI-639	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr
SI-641	SIT fill and drain isolation	GL	AD	2	B		Closed	S MT FS LPV	3 mo 3 mo RO ⁽³⁶⁾ 2 yr
SI-642	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr

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Table 3.9-13 (22 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-643	SIT atmospheric vent isolation	GL	S	2	B		Open /Closed	S MT FS LPV	CS ⁽³¹⁾ CS ⁽³¹⁾ CS ⁽³¹⁾ 2 yr
SI-644	SIT discharge isolation	GL	EL	1	B		Open /Closed	S MT LPV	CS ⁽²⁴⁾ CS ⁽²⁴⁾ 2 yr
SI-646	SI line isolation	GL	EL	2	B	CIN	Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-648	Check valve leakage isolation	GL	AD	1	A	PIV	Closed	S MT FS LPV LT	3 mo 3 mo RO ⁽³⁶⁾ 2 yr 2 yr
SI-649	SIT nitrogen supply isolation	GL	AD	2	B		Closed	S FS LPV	EI ⁽³⁵⁾ RO ⁽³⁵⁾ 2 yr
SI-651	SCS suction line isolation	GT	EL	1	A	PIV	Open /Closed	S MT LPV LT	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr 2 yr
SI-652	SCS suction line isolation	GT	EL	1	A	PIV	Open /Closed	S MT LPV LT	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr 2 yr

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Table 3.9-13 (23 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-653	SCS suction line isolation	GT	EL	1	A	PIV, CIN	Open /Closed	S MT LPV LT	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr 2 yr
SI-654	SCS suction line isolation	GT	EL	1	A	PIV, CIN	Open /Closed	S MT LPV LT	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr 2 yr
SI-655	SCS suction line isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr
SI-656	SCS suction line isolation	GT	EL	2	B	CIN	Open /Closed	S MT LPV	CS ⁽²⁵⁾ CS ⁽²⁵⁾ 2 yr
SI-661	RDT isolation	GL	AD	2	B		Open /Closed	S FS LPV	3 mo RO ⁽³⁶⁾ 2 yr
SI-670	SIT drain line isolation	GL	AD	2	B		Open /Closed	S FS LPV	3 mo RO ⁽³⁶⁾ 2 yr
SI-682	SIT fill line isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (24 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SI-688	SCS test return line isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-690	SCS warmup line flow control	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-691	SCS warmup line flow control	GL	EL	2	B		Open /Closed	S MT LPV	3 mo 3 mo 2 yr
SI-693	SCS test return line isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
SI-704	SIS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-705	SIS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-706	SIS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-707	SIS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-712	SCS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-713	SCS fill check	CK	SA	2	C			S RF	3 mo 3 mo
SI-801	External emergency injection line check	CK	SA	2	C		Open /Closed	S RF	3 mo 3 mo

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Table 3.9-13 (25 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SI-803	External emergency injection line isolation	GT	M	2	B		Open /Closed	S LPV	3 mo 2 yr
CS-0001	Containment spray containment isolation	GT	EL	2	B		Open	S MT FS LPV	3 mo 3 mo RO(2-yr) 2 yr
CS-0002	Containment spray containment isolation	GT	EL	2	B		Open	S MT FS LPV	3 mo 3 mo RO(2-yr) 2 yr
CS-0003	Containment spray containment isolation	GT	EL	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo RO(2-yr) 2 yr
CS-0004	Containment spray containment isolation	GT	EL	2	A	CIC	Open	LT S MT LPV	2 yr 3 mo 3 mo 2 yr
CS-0005	Containment spray IRWST return isolation	GL	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CS-0006	Containment spray IRWST return isolation	GL	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (26 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
CS-0007	Containment spray IRWST return isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CS-0008	Containment spray IRWST return isolation	GT	EL	2	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CS-1001	CS pump 1A check	CK	SA	2	C	P	Open/Closed	S RF	3 mo 3 mo
CS-1002	CS pump 1B check	CK	SA	2	C	P	Open/Closed	S RF	3 mo 3 mo
CS-1005	CSHX 1A relief	RV	SA	2	C	P	Open/Closed	RVT	10yr
CS-1006	CSHX 1B relief	RV	SA	2	C	P	Open/Closed	RVT	10yr
CS-1007	Containment isolation check	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO ⁽¹⁸⁾ 2 yr RO ⁽¹⁸⁾
CS-1008	Containment isolation check	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO ⁽¹⁸⁾ 2 yr RO ⁽¹⁸⁾
CS-1011	Refueling pool isolation	GT	M	3	B	P		LPV	2 yr
CS-1012	Refueling pool isolation	GT	M	3	B	P		LPV	2 yr
CS-1013	ECSBS containment isolation	GT	M	2	A	P, CIC	Open	LT	2 yr
CS-1014	ECSBS containment isolation check	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO ⁽¹⁸⁾ 2 yr RO ⁽¹⁸⁾

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Table 3.9-13 (27 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CS-1021	CS miniflow HX 2A relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CS-1022	CS miniflow HX 2B relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CS-1023	IRWST return line relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CS-1024	IRWST return line relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
IW-0001	HVT Flooding	GT	EL	2	B		Closed	MT S LPV	RO ⁽³⁴⁾ RO ⁽³⁴⁾ 2 yr
IW-0002	HVT Flooding	GT	EL	2	B		Closed	MT S LPV	RO ⁽³⁴⁾ RO ⁽³⁴⁾ 2 yr
IW-0003	Reactor cavity flooding isolation	GT	EL	2	B		Closed	MT S LPV	RO ⁽³⁴⁾ RO ⁽³⁴⁾ 2 yr
IW-0004	Reactor cavity flooding isolation	GT	EL	2	B		Closed	MT S LPV	RO ⁽³⁴⁾ RO ⁽³⁴⁾ 2 yr
IW-0010	IRWST level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0011	IRWST level instrument isolation	GL	S	2	B	CIN	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (28 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
IW-0012	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0013	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0014	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0015	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0016	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0017	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (29 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
IW-0018	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0019	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0020	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0021	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0022	IRWST level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0023	IRWST level instrument isolation	GL	S	2	B	CIN	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (30 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
IW-0024	IRWST level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0025	IRWST level instrument isolation	GL	S	2	B	CIN	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
IW-0026	IRWST level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0027	IRWST level instrument isolation	GL	S	2	B	CIN	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
IW-0028	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0029	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (31 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
IW-0030	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0031	HVT level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0032	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0033	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0034	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr
IW-0035	Reactor cavity level instrument isolation	GL	S	2	A	CIC	Open	LT S MT FS LPV	2 yr 3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (32 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
IW-0005	BAMP suction isolation	GT	EL	2	B	CIN	Closed	LT MT S LPV	2-yr 3 mo 3 mo 2 yr
IW-0006	BAMP suction isolation	GT	EL	2	B	CIN	Closed	LT MT S LPV	2-yr 3 mo 3 mo 2 yr
IW-1003	BAMP suction line relief	RV	SA	2	C	PIV CIN	Open/Closed	LT RVT	2-yr 10 yr
CV-189	IRWST makeup line check	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo
CV-255	Seal injection containment isolation	GL	EL	2	A	CIC	Closed	S MT LPV LT	CS ⁽⁶⁾ CS ⁽⁶⁾ 2 yr 2 yr
CV-363	Shutdown purification line check	CK	SA	2	A/C	CIC	Closed	LT RF	2 yr CS ⁽²³⁾
CV-362	Shutdown purification line isolation	GT	M	2	A	P, CIC	Closed	LT LPV	2 yr 2 yr
CV-494	Resin sluice supply header to reactor drain header check	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo

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Table 3.9-13 (33 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CV-505	RCP CBO containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽⁷⁾ CS ⁽⁷⁾ CS ⁽⁷⁾ 2 yr 2 yr
CV-506	RCP CBO containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽⁷⁾ CS ⁽⁷⁾ CS ⁽⁷⁾ 2 yr 2 yr
CV-509	IRWST makeup line containment isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
CV-515	Letdown isolation	GL	AD	1	A	TIV	Closed	S MT FS LPV LT	CS ⁽⁸⁾ CS ⁽⁸⁾ CS ⁽⁸⁾ 2 yr 2 yr
CV-516	Letdown isolation	GL	AD	1	A		Closed	S MT FS LPV LT	CS ⁽⁸⁾ CS ⁽⁸⁾ CS ⁽⁸⁾ 2 yr 2 yr

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Table 3.9-13 (34 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
CV-522	Letdown containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽⁸⁾ CS ⁽⁸⁾ CS ⁽⁸⁾ 2 yr 2 yr
CV-523	Letdown containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽⁸⁾ CS ⁽⁸⁾ CS ⁽⁸⁾ 2 yr 2 yr
CV-524	Charging containment isolation	GL	EL	2	A	CIC	Closed	S MT LPV LT	RO ⁽⁹⁾ RO ⁽⁹⁾ 2 yr 2 yr
CV-560	Reactor drain tank effluent containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
CV-561	Reactor drain tank effluent containment isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (35 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
CV-576	Charging flow restricting	GL	EL	2	A		Closed	LT LPV S MT	2 yr ⁽⁴¹⁾ 2 yr RO ⁽⁴¹⁾ RO ⁽⁴¹⁾
CV-577	Charging flow restricting	GL	EL	2	A		Closed	LT LPV MT S	2 yr ⁽⁴¹⁾ 2 yr RO ⁽⁴¹⁾ RO ⁽⁴¹⁾
CV-580	Resin sluice supply header to reactor drain header isolation	GT	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
CV-747	Charging line check	CK	SA	2	A/C	CIC	Closed	LT RF	2 yr RO ⁽¹⁰⁾
CV-835	Seal injection containment isolation	CK	SA	2	A/C	CIC	Closed	LT RF	2 yr CS ⁽¹¹⁾
SD-0001	SG 1 blowdown isolation	GT	EL	2	B	P		LPV	2 yr
SD-0002	SG 2 blowdown isolation	GT	EL	2	B	P		LPV	2 yr
SD-0003	SG 3 blowdown isolation	GT	EL	2	B	P		LPV	2 yr
SD-0004	SG 4 blowdown isolation	GT	EL	2	B	P		LPV	2 yr
SD-0005	SG 1 blowdown to flash tank	GT	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (36 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
SD-0007	SG 1 blowdown to flash tank	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
SD-0006	SG 2 blowdown to flash tank	GT	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
SD-0008	SG 2 blowdown to flash tank	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
SD-1115	SG 1 wet layup recirculation isolation	CK	SA	2	A/C	CIC	Closed	S RF LT	CS ⁽²⁷⁾ CS ⁽²⁷⁾ 2 yr
SD-1116	SG 2 wet layup recirculation isolation	CK	SA	2	A/C	CIC	Closed	S RF LT	CS ⁽²⁷⁾ CS ⁽²⁷⁾ 2 yr
SD-1113	SG 1 wet layup recirculation isolation	GT	M	2	A	P, CIC	Closed	LT	2 yr
SD-1114	SG 2 wet layup recirculation isolation	GT	M	2	A	P, CIC	Closed	LT	2 yr
CC-0131	Essential central chiller condenser 2A isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0132	Essential central chiller condenser 2B isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (37 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
CC-0181	EDG 1A inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0182	EDG 1B inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0191	EDG 2A inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0192	EDG 2B inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0383	Essential central chiller condenser 1A isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0384	Essential central chiller condenser 1B isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0901	Essential central chiller condenser 1A outlet throttling	3W	AD	3	B		Open	S FS LPV	3 mo 3 mo 2 yr
CC-0902	Essential central chiller condenser 1B outlet throttling	3W	AD	3	B		Open	S FS LPV	3 mo 3 mo 2 yr
CC-0905	Essential central chiller condenser 2A outlet throttling	3W	AD	3	B		Open	S FS LPV	3 mo 3 mo 2 yr
CC-0906	Essential central chiller condenser 2B outlet throttling	3W	AD	3	B		Open	S FS LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (38 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-0937	Cross connection isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0938	Cross connection isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0939	Cross connection isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0940	Cross connection isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-1031	CCW HX 1A relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1032	CCW HX 1B relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1033	CCW HX 2A relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1034	CCW HX 2B relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1035	CCW HX 3A relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1036	CCW HX 3B relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1109	CCW surge tank 1A N2 supply check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1110	CCW surge tank 1B N2 supply check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1111	CCW surge tank 1A relief	RV	SA	3	C		Open/Closed	RVT	10 yr
CC-1112	CCW surge tank 1B relief	RV	SA	3	C		Open/Closed	RVT	10 yr
CC-1131	CCW pump 01A recirculation check	CK	SA	3	C		Open/Closed	S RF	3 mo. 3 mo.
CC-1132	CCW pump 01B recirculation check	CK	SA	3	C		Open/Closed	S RF	3 mo. 3 mo.

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Table 3.9-13 (39 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-1133	CCW pump 02A recirculation check	CK	SA	3	C		Open/Closed	S RF	3 mo. 3 mo.
CC-1134	CCW pump 02B recirculation check	CK	SA	3	C		Open/Closed	S RF	3 mo. 3 mo.
CC-1303	CCW makeup pump 3A discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1304	CCW makeup pump 3B discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1309	CCW surge tank 1A makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1310	CCW surge tank 1B makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1317	CCW surge tank 1A demi. makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1318	CCW surge tank 1B demi. makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1319	CCW surge tank 1A demi. makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1320	CCW surge tank 1B demi. makeup check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1325	CCW makeup to AFW storage tank A check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1326	CCW makeup to AFW storage tank B check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo

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Table 3.9-13 (40 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-0027	CCW HXs bypass A isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0028	CCW HXS bypass B isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0143	Non-essential supply header 1A isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0147	Non-essential return header 1B isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0021	CCW HX 01A outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0023	CCW HX 02A outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0025	CCW HX 03A outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (41 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-0351	SCS HX 1 inlet isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0389	SFP HX A inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0097	CS HX 1 inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0145	Non-essential supply header 1 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0149	Non-essential return header 1 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0231	CCW supply to RCP 1A, 1B, 2A, 2B isolation	BF	EL	2	A	CIC	Open/Closed	S MT LPV LT	CS ⁽¹⁾ CS ⁽¹⁾ 2 yr 2 yr
CC-1001	CCW pump 1A discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1003	CCW pump 2A discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1099	CCW supply to RCP 1A, 1B, 2A, 2B check	CK	SA	2	A/C	CIC	Open/Closed	S RF LT	CS ⁽²⁾ RO ⁽²⁾ 2 yr

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Table 3.9-13 (42 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-0011	CCW surge tank 01A makeup supply header isolation	GL	EL	3	B		Open/Closed	S MT LPV	3 mo 3 mo 2 yr
CC-1515	SC HX 1 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1547	SC miniflow HX 1 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-0249	CCW return from RCP 1A, 1B, 2A, 2B isolation	BF	EL	2	A	CIC	Open/Closed	S MT LPV LT	CS (1) CS (1) 2 yr 2 yr
CC-1247	CS miniflow HX 1 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-0250	CCW return from RCP 1A, 1B, 2A, 2B isolation	BF	EL	2	A	CIC	Open/Closed	S MT LPV LT	CS (1) CS (1) 2 yr 2 yr
CC-1575	SFP cooling HX A header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1215	CS HX 1 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1100	CCW return from RCP 1A, 1B, 2A, 2B isolation	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO (2) 2 yr CS (2)
CC-1569	Essential water chiller condenser 1A header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1107	CCW surge tank 01A vacuum relief	RV	SA	3	C		Open/Closed	RVT	2 yr
CC-1269	Essential water chiller condenser 2A header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr

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Table 3.9-13 (43 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
CC-0028	CCW HX bypass header 2-isolation	BF	EL	3	A			S MT LPV	3 mo 3 mo 2 yr
CC-0144	Non-essential supply header 2 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0148	Non-essential return header 2 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0022	CCW HX 01B outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0024	CCW HX 02B outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0026	CCW HX 03B outlet throttling	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0352	SCS HX 2 inlet isolation	BF	EL	3	B		Closed	S MT LPV	3 mo 3 mo 2 yr
CC-0390	SFP HX B inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
CC-0098	CS HX 1 inlet isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr

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Table 3.9-13 (44 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-0146	Non-essential supply header 2 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-0150	Non-essential return header 2 isolation	BF	EL	3	B		Closed	S MT LPV	CS ⁽³⁾ CS ⁽³⁾ 2 yr
CC-1002	CCW pump 1B discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-1004	CCW pump 2B discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
CC-0937	Cross connection supply header isolation	BF	EL	3	B			S MT LPV	3 mo 3 mo 2 yr
CC-0938	Cross connection supply header isolation	BF	EL	3	B			S MT LPV	3 mo 3 mo 2 yr
CC-0939	Cross connection return header isolation	BF	EL	3	B			S MT LPV	3 mo 3 mo 2 yr
CC-0940	Cross connection return header isolation	BF	EL	3	B			S MT LPV	3 mo 3 mo 2 yr
CC-0012	CCW surge tank 01B makeup supply header isolation	GL	EL	3	B		Open/Closed	S MT LPV	3 mo 3 mo 2 yr
CC-1516	SC HX 2 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1548	SC miniflow HX 2 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr

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Table 3.9-13 (45 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-1248	CS miniflow HX 2 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1576	SFP cooling HX B header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1215	CS HX 1 header relief	RV	SA	3	C			RVT	10 yr
CC-1216	CS HX 2 header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-0296	CCW supply to letdown HX isolation	BF	EL	2	A	CIC	Closed	S MT LPV LT	CS ⁽⁴⁾ CS ⁽⁴⁾ 2 yr 2 yr
CC-0297	CCW supply to letdown HX isolation	BF	EL	2	A	CIC	Closed	S MT LPV LT	CS ⁽⁴⁾ CS ⁽⁴⁾ 2 yr 2 yr
CC-0301	CCW return from letdown HX isolation	BF	EL	2	A	CIC	Closed	S MT LPV LT	CS ⁽⁴⁾ CS ⁽⁴⁾ 2 yr 2 yr
CC-0302	CCW return from letdown HX isolation	BF	EL	2	A	CIC	Closed	S MT LPV LT	CS ⁽⁴⁾ CS ⁽⁴⁾ 2 yr 2 yr
CC-1570	Essential water chiller condenser 1B header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1270	Essential water chiller condenser 2B header relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
CC-1685	CCW supply to letdown HX isolation	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	CS ⁽⁵⁾ 2 yr RO ⁽⁵⁾

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Table 3.9-13 (46 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CC-1686	CCW return from letdown HX isolation	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO ⁽⁵⁾ 2 yr CS ⁽⁵⁾
CC-1108	CCW surge tank 01B vacuum relief	RV	SA	3	C		Open/Closed	RVT	2 yr
SX-0043	ESW blowdown isolation	GT	S	3	B		Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
SX-0044	ESW blowdown isolation	GT	S	3	B		Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
SX-0045	ESW pump 1A discharge isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
SX-0046	ESW pump 1B discharge isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
SX-0047	ESW pump 2A discharge isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
SX-0048	ESW pump 2B discharge isolation	BF	EL	3	B		Open	S MT LPV	3 mo 3 mo 2 yr
SX-1001	ESW pump 1A discharge	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo

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Table 3.9-13 (47 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
SX-1003	ESW pump 2A discharge	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
SX-1002	ESW pump 1B discharge	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
SX-1004	ESW pump 2B discharge	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
SX-1041	CCW HX 1A cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1042	CCW HX 1B cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1043	CCW HX 2A cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1044	CCW HX 2B cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1045	CCW HX 3A cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1046	CCW HX 3B cold side relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
SX-1051	CCW HX Outlet Common Header Vacuum Relief	RV	SA	3	C		Open/Closed	RVT	2 yr
SX-1052	CCW HX Outlet Common Header Vacuum Relief	RV	SA	3	C		Open/Closed	RVT	2 yr
FC-1005	FC pump A discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
FC-1006	FC pump B discharge check	CK	SA	3	C		Open/Closed	S RF	3 mo 3 mo
FC-1013	SFPC HX A relief	RV	SA	3	C	P	Open/Closed	RVT	10yr
FC-1014	SFPC HX B relief	RV	SA	3	C	P	Open/Closed	RVT	10 yr
FC-1142	Refueling pool cleanup suction isolation	GT	M	2	A	P, CIC	Closed	LT	2 yr

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Table 3.9-13 (48 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
FC-1143	Refueling pool cleanup suction isolation	GT	M	2	A	P, CIC	Closed	LT	2 yr
FC-1144	Refueling pool cleanup discharge isolation	GT	M	2	A	P,CIC	Closed	LT	2 yr
FC-1145	Refueling pool cleanup discharge check valve	CK	SA	2	A/C	CIC	Open/Closed	S LT RF	RO ⁽⁴⁷⁾ 2 yr RO ⁽⁴⁷⁾
FC-1217	IRWST return isolation	GT	M	3	B	P		LPV	2 yr
GW-0001	Reactor drain tank gas space to GWMS	GL	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
GW-0002	Reactor drain tank gas space to GWMS	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
DE-0005	Containment building isolation	GL	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
DE-0006	Containment building isolation	GL	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (49 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
PX-0001	Hot leg sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0002	Hot leg sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0003	PZR liquid sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0004	PZR liquid sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0005	PZR steam space sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0006	PZR steam space sample	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (50 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
PX-0008	SI pump 1&3 miniflow-sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0009	SI pump 2&4 miniflow-sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0012	Purification filter sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0013	Purification filter sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0014	Debor. IX outlet sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0016	SC pump 1 miniflow-sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0017	SC pump 2 miniflow-sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0020	SI tank sample containment isolation	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0021	SI tank sample containment isolation	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0022	SI tank 1A sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0023	SI tank 1B sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0024	SI tank 1C sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr

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Table 3.9-13 (51 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
PX-0025	SI tank 1D sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0026	CS pump 1 miniflow sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0027	CS pump 2 miniflow sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-0034	Sample return to VCT isolation	GL	S	3	B	P		FS LPV	3 mo 2 yr
PX-0041	Containment air sample containment isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
PX-0042	Containment air sample containment isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
PX-0043	Containment air sample return containment isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
PX-0053	PASS sample return	GL	S	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
PX-0063	VCT gas sample isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr
PX-1025	Sample return to VCT isolation	GL	S	2	B	P		FS LPV	3 mo 2 yr

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Table 3.9-13 (52 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
PX-1005	Containment isolation	CK	SA	2	A/C	CIC	Open/Closed	S RF LT	RO ⁽⁴²⁾ RO ⁽⁴²⁾ 2 yr
PX-1020	Containment air sample return containment isolation	CK	SA	2	A/C	CIC	Open/Closed	S RF LT	RO ⁽⁴³⁾ RO ⁽⁴³⁾ 2 yr
AF-0035	Motor-driven AFW pump PP02A flow modulating	GL	S	3	B		Control	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AF-0036	Motor Turbine -driven AFW pump PP02B PP01B flow modulating	GL	S	3	B		Control	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AF-0037	Turbine Steam -driven AFW pump PP01A flow modulating	GL	S	3	B		Control	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AF-0038	Motor-driven AFW pump PP01B PP02B flow modulating	GL	S	3	B		Control	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AF-0043	Motor-driven AFW pump PP02A AFW isolation	GT	EL	2	B	TIV, CIN	Open/Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr (39,45)

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Table 3.9-13 (53 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
AF-0044	Motor Turbine-driven AFW pump PP02B PP01B AFW isolation	GT	EL	2	B	TIV, CIN	Open/Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ^(39,45)
AF-0045	Turbine-driven AFW pump PP01A AFW isolation	GT	EL	2	B	TIV, CIN	Open/Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ^(39,45)
AF-0046	Motor Turbine-driven AFW pump PP01B PP02B AFW isolation	GT	EL	2	B	TIV, CIN	Open/Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ^(39,45)
AF-1003A	Motor-driven AF pump PP02A discharge	CK	SA	3	C		Open	S RF	CS ⁽⁴⁴⁾ 3 mo
AF-1003B	Motor-driven AF pump PP02B discharge	CK	SA	3	C		Open	S RF	CS ⁽⁴⁴⁾ 3 mo
AF-1004A	Turbine-driven AF pump PP01A discharge	CK	SA	3	C		Open	S RF	CS ⁽⁴⁴⁾ 3 mo
AF-1004B	Turbine-driven AF pump PP01B discharge	CK	SA	3	C		Open	S RF	CS ⁽⁴⁴⁾ 3 mo
AF-1007A	Motor-driven AFW pump PP02A AFW isolation	CK	SA	2	C		Open	S RF LT	CS ⁽⁴⁴⁾ 3 mo ⁽⁴⁴⁾ 2 yr ⁽³⁹⁾
AF-1007B	Motor-driven AFW pump PP02B AFW isolation	CK	SA	2	C		Open	S RF LT	CS ⁽⁴⁴⁾ 3 mo ⁽⁴⁴⁾ 2 yr ⁽³⁹⁾

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Table 3.9-13 (54 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
AF-1008A	Turbine-driven AFW pump PP01A AFW isolation	CK	SA	2	C		Open	S RF LT	CS ⁽⁴⁴⁾ 3 mo ⁽⁴⁴⁾ 2 yr ⁽³⁹⁾
AF-1008B	Turbine-driven AFW pump PP01B AFW isolation	CK	SA	2	C		Open	S RF LT	CS ⁽⁴⁴⁾ 3 mo ⁽⁴⁴⁾ 2 yr ⁽³⁹⁾
AF-1012A	AFW mini flow check	CK	SA	3	C		Open	S	3 mo
AF-1012B	AFW mini flow check	CK	SA	3	C		Open	S	3 mo
AF-1014A	AFW mini flow check	CK	SA	3	C		Open	S	3 mo
AF-1014B	AFW mini flow check	CK	SA	3	C		Open	S	3 mo
AF-1022A	Chemical injection for AFW	CK	SA	3	C		Closed	S RF	CS 3 mo
AF-1022B	Chemical injection for AFW	CK	SA	3	C		Closed	S RF	CS 3 mo
AF-1024A	Chemical injection for AFW	CK	SA	3	C		Closed	S RF	CS 3 mo
AF-1024B	Chemical injection for AFW	CK	SA	3	C		Closed	S RF	CS 3 mo
AT-0007	AF pump turbine TA01A steam supply line drip leg control emergency steam drain	GL	P AD	3	B		Open/Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AT-0008	AF pump turbine TA01B steam supply line drip leg control emergency steam drain	GL	P AD	3	B		Open/Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AT-0009	AF pump turbine TA01A steam isolation	GL	P AD	3	B		Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (55 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
AT-0010	AF pump turbine TA01B steam isolation	GL	P AD	3	B		Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AT-0011	AF pump turbine TA01A steam bypass	GL	AD	3	B			S MT FS LPV	3 mo 3 mo 3 mo 2 yr
AT-0012	AF pump turbine TA01B steam isolation bypass	GL	AD	3	B			S MT FS LPV	3 mo 3 mo 3 mo 2 yr
CA-0013	Condenser vacuum exhaust gas Containment isolation	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
CA-1023	Condenser vacuum exhaust gas Containment isolation	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo
DO-1005A	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1005B	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1005C	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1005D	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1007A	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1007B	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo

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Table 3.9-13 (56 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
DO-1007C	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DO-1007D	Fuel oil transfer pump discharge	CK	SA	3	C		Open	RF	3 mo
DG-4022A	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4022B	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4022C	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4022D	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4030A	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4030B	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4030C	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4030D	Backflow prevention for the starting air compressor	CK	SA	3	C		Closed	Note 37	Note 37
DG-4034A	Air receiver 40A discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4034B	Air receiver 40B discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4034C	Air receiver 40C discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4034D	Air receiver 40D discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4312A	Air receiver 41A discharge	CK	SA	3	C		Open	Note 37	Note 37

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Table 3.9-13 (57 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
DG-4312B	Air receiver 41B discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4312C	Air receiver 41C discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4312D	Air receiver 41D discharge	CK	SA	3	C		Open	Note 37	Note 37
DG-4316A	Overspeed Air Receiver 42A inlet	CK	SA	3	C		Open	Note 37	Note 37
DG-4316B	Overspeed Air Receiver 42B inlet	CK	SA	3	C		Open	Note 37	Note 37
DG-4316C	Overspeed Air Receiver 42C inlet	CK	SA	3	C		Open	Note 37	Note 37
DG-4316D	Overspeed Air Receiver 42D inlet	CK	SA	3	C		Open	Note 37	Note 37
DG-4114A	Lube oil/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4114B	Lube oil/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4114C	Lube oil/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4114D	Lube oil/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4217A	HT/CC water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4217B	HT/CC water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4217C	HT/CC water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4217D	HT/CC water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4250A	CC/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37

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Table 3.9-13 (58 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
DG-4250B	CC/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4250C	CC/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-4250D	CC/LT water heat exchanger temperature control 3-way valve	3W	SA	3	C		Control	Note 37	Note 37
DG-5023A	Start air receiver 40A relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5023B	Start air receiver 40B relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5023C	Start air receiver 40C relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5023D	Start air receiver 40D relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5031A	Start air receiver 41A relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5031B	Start air receiver 41B relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5031C	Start air receiver 41C relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
DG-5031D	Start air receiver 41D relief valve	RV	SA	3	C		Open/Closed	RVT	10 yr
FP-0030	Fire water supply	GL	S	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
FP-1440	Fire water supply	CK	SA	2	A/C	CIC	Closed	LT RF	2 yr RO ⁽³²⁾
FW-0121	SG 1 main FW economizer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (59 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
FW-0122	SG 1 main FW economizer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0123	SG 2 main FW economizer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0124	SG 2 main FW economizer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0131	SG 1 Main FW downcomer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0132	SG 1 main FW downcomer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (60 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
FW-0133	SG 2 main FW downcomer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0134	SG 2 main FW downcomer isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹³⁾ CS ⁽¹³⁾ CS ⁽¹³⁾ 2 yr 2 yr ⁽³⁹⁾
FW-0138	Feedwater chemical injection valve	GL	P AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
FW-0139	Feedwater chemical injection valve	GL	P AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
FW-1035	SG 1 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾
FW-1036	SG 1 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾
FW-1037	SG 1 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾
FW-1039	SG 1 downcomer FW line check valve	CK	SA	2	C	CIN	Closed	RF LT	CS ⁽²⁹⁾ 2 yr ⁽³⁹⁾
FW-1040	SG 1 downcomer FW line check valve	CK	SA	2	C		Closed	RF LT	CS ⁽²⁹⁾ 2 yr ⁽³⁹⁾
FW-1042	SG 2 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾
FW-1043	SG 1 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾

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Table 3.9-13 (61 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
FW-1044	SG 2 economizer FW line check valve	CK	SA	2	C		Closed	RF	CS ⁽²⁹⁾
FW-1046	SG 2 downcomer FW line check valve	CK	SA	2	C	CIN	Closed	RF LT	CS ⁽²⁹⁾ 2-yr ⁽³⁹⁾
FW-1047	SG 2 downcomer FW line check valve	CK	SA	2	C		Closed	RF LT	CS ⁽²⁹⁾ 2-yr ⁽³⁹⁾
FW-1050	SG 1 feedwater chemical injection	CK	SA	2	C		Closed	S RF	3 mo 3 mo
FW-1052	SG 1 feedwater chemical injection	CK	SA	2	C		Closed	S RF	3 mo 3 mo
IA-0020	Instrumentation air supply	GL	P AD	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
IA-1601	Instrumentation air supply	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo
MS-011	SG 1 main steam isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-012	SG 1 main steam isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (62 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
MS-013	SG 2 main steam isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-014	SG 2 main steam isolation	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-015	SG 1 main steam isolation valve bypass	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-016	SG 1 main steam isolation valve bypass	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-017	SG 2 main steam isolation valve bypass	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (63 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
MS-018	SG 2 main steam isolation valve bypass	GT	EH	2	B	CIN	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-090	SG1 main steam drip leg isolation valve	GL	AD	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-091	SG1 main steam drip leg isolation valve	GL	AD	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-092	SG2 main steam drip leg isolation valve	GL	AD	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾
MS-093	SG2 main steam drip leg isolation valve	GL	AD	2	B	CIN	Closed	S MT FS LPV LT	CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ CS ⁽¹⁴⁾ 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (64 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
MS-101	SG 1 atmospheric dump valve	GL	EH	2	B	CIN	Closed	S MT FS LPV LT	2 yr 2 yr 2 yr 2 yr 2 yr ⁽³⁹⁾
MS-102	SG 1 atmospheric dump valve	GL	EH	2	B	CIN	Closed	S MT FS LPV LT	2 yr 2 yr 2 yr 2 yr 2 yr ⁽³⁹⁾
MS-103	SG 2 atmospheric dump valve	GL	EH	2	B	CIN	Closed	S MT FS LPV LT	2 yr 2 yr 2 yr 2 yr 2 yr ⁽³⁹⁾
MS-104	SG 2 atmospheric dump valve	GL	EH	2	B	CIN	Closed	S MT FS LPV LT	2 yr 2 yr 2 yr 2 yr 2 yr ⁽³⁹⁾
MS-105	SG 1 MS ADV isolation valve	GT	EL	2	B	CIN	Open	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (65 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
MS-106	SG 1 MS ADV isolation valve	GT	EL	2	B	CIN	Open	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-107	SG 2 MS ADV isolation valve	GT	EL	2	B	CIN	Open	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-108	SG 2 MS ADV isolation valve	GT	EL	2	B	CIN	Open	S MT LPV LT	3 mo 3 mo 2 yr 2 yr ⁽³⁹⁾
MS-109	AF Pump turbine TA01B steam supply	GL	AD	2	B	-	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
MS-110	AF Pump turbine TA01A steam supply	GL	AD	2	B	-	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
MS-111	AF Pump turbine TA01B warmup supply	GL	AD	2	B	-	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
MS-112	AF Pump turbine TA01A warmup steam supply	GL	AD	2	B	-	Open	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (66 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
MS-1301	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1302	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1303	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1304	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1305	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1306	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1307	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1308	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1309	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1310	SG 1 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1311	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1312	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1313	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1314	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾

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Table 3.9-13 (67 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
MS-1315	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1316	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1317	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1318	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1319	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
MS-1320	SG 2 main steam safety valve	RV	SA	2	C	CIN	Open/Closed	RVT LT	5 yr 2 yr ⁽³⁹⁾
NT-0004	Nitrogen supply	GL	AD	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
NT-1016	Nitrogen supply	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo
SA-0001	Service air supply	GL	P AD	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
SA-1401	Service air supply	CK	SA	2	A/C	CIC	Closed	S LT RF	3 mo 2 yr 3 mo

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Table 3.9-13 (68 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
VQ-0011	Containment High Volume Purge Supply	BF	EH	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽²⁶⁾ CS ⁽²⁶⁾ CS ⁽²⁶⁾ 2 yr 2 yr
VQ-0012	Containment High Volume Purge Supply	BF	EL	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽²⁶⁾ CS ⁽²⁶⁾ CS ⁽²⁶⁾ 2 yr 2 yr
VQ-0013	Containment High Volume Purge Exhaust	BF	EL	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽²⁶⁾ CS ⁽²⁶⁾ CS ⁽²⁶⁾ 2 yr 2 yr
VQ-0014	Containment High Volume Purge Exhaust	BF	EH	2	A	CIC	Closed	S MT FS LPV LT	CS ⁽²⁶⁾ CS ⁽²⁶⁾ CS ⁽²⁶⁾ 2 yr 2 yr
VQ-0031	Containment Low Volume Purge Supply	BF	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (69 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
VQ-0032	Containment low volume purge supply	BF	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
VQ-0033	Containment low volume purge exhaust	BF	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
VQ-0034	Containment low volume purge exhaust	BF	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo 3 mo 3 mo 2 yr 2 yr
WM-1751	Demineralized water supply	GL	M	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
WM-1752	Demineralized water supply	CK	SA	2	A/C	CIC	Closed	S LT RF	RO ⁽³³⁾ 2 yr RO ⁽³³⁾
WO-906A	Essential chilled water flow control control room supply AHU HV01A	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr

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Table 3.9-13 (70 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
WO-906B	Essential chilled water flow control control room supply AHU HV01B	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-906C	Essential chilled water flow control control room supply AHU HV01C	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-906D	Essential chilled water flow control control room supply AHU HV01D	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-917A	Essential chilled water flow control EDG room normal supply AHU HV11C	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-917B	Essential chilled water flow control EDG room normal supply AHU HV11D	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-918A	Essential chilled water flow control EDG room normal supply AHU HV11A	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-918B	Essential chilled water flow control EDG room normal supply AHU HV11B	3W	AD	3	B		Open	S MT LPV	2 yr 2 yr 2 yr
WO-1001A	Essential chilled water compression tank A relief	RV	SA	3	C		Open	RVT	10 yr
WO-1001B	Essential chilled water compression tank B relief	RV	SA	3	C		Open	RVT	10 yr
WO-1003A	Essential chilled water compression tank A MDS-makeup line	CK	SA	3	C		Open	RF	3 mo

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Table 3.9-13 (71 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
WO-1003B	Essential chilled water compression tank B MDS- makeup line	CK	SA	3	C		Open	RF	3 mo
WO-1010A	Essential chilled water pump PP01A discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1010B	Essential chilled water pump PP01B discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1011A	Essential chilled water makeup pump A discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1011B	Essential chilled water makeup pump B discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1014A	Essential chilled water pump PP02A discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1014B	Essential chilled water pump PP02B discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1022A	Essential chilled water makeup pump A discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1022B	Essential chilled water makeup pump B discharge	CK	SA	3	C		Open	S RF	3 mo 3 mo
WO-1031A	Essential chilled water compression tank A nitrogen supply	CK	SA	3	C		Open	RF	3 mo
WO-1031B	Essential chilled water compression tank B nitrogen supply	CK	SA	3	C		Open	RF	3 mo
WO-1032A	Essential chilled water compression tank A MDS- makeup line	CK	SA	3	C		Open	RF	3 mo
WO-1032B	Essential chilled water compression tank B MDS- makeup line	CK	SA	3	C		Open	RF	3 mo

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Table 3.9-13 (72 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
WI-012	PCW containment return from containment ventilation units	GT	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 2 yr 2 yr
WI-013	PCW containment supply to containment ventilation units	GT	AD	2	A	CIC	Closed	S MT FS LPV LT	3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 2 yr 2 yr
WI-014	PCW containment return from containment ventilation units	RV	SA	2	C	CIN	Closed	RVT	10yr
WI-015	PCW containment return from containment ventilation units	GT	EL	2	A	CIC	Closed	S MT FS LPV LT	3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 3 mo ⁽²⁸⁾ 2 yr 2 yr
WI-1043	PCW containment supply to containment ventilation units	CK	SA	2	A/C	CIC	Closed	S RF LT	3 mo 3 mo 2 yr
PR-0431	Containment radiation monitor sample inlet	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
PR-0432	Containment radiation monitor sample inlet	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr

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Table 3.9-13 (73 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
PR-0434	Containment radiation monitor sample outlet	GT	EL	2	A	CIC	Closed	S MT LPV LT	3 mo 3 mo 2 yr 2 yr
PR-1433	Containment radiation monitor sample outlet	CK	SA	2	A/C	CIC	Closed	S RF LT	RO RO 2 yr
CM-0001	Containment H2 sample Ch. A inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0002	Containment H2 sample Ch. B inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0003	Containment H2 analyzer Ch. A inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0004	Containment H2 analyzer Ch. B inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr

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Table 3.9-13 (74 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CM-0009	Containment H2 analyzer Ch. A outlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0010	Containment H2 analyzer Ch. B outlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0011	Containment IRWST H2 sample Ch. A inlet isolation	GL	S	2	A	CIC	Closed	FS LT S MT LPV	3 mo 2 yr 3 mo 3 mo 2 yr
CM-0012	Containment IRWST H2 sample Ch. B inlet isolation	GL	S	2	A	CIC	Closed	FS LT S MT LPV	3 mo 2 yr 3 mo 3 mo 2 yr
CM-0013	Containment IRWST H2 sample Ch. A inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr

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Table 3.9-13 (75 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CM-0014	Containment IRWST H2 sample Ch. B inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0017	Containment pressure monitor Ch. A isolation	GL	S	2	A	CIC	Open/Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0018	Containment pressure monitor Ch. B isolation	GL	S	2	A	CIC	Open/Closed	FS LT S MT LPV	3 mo 2 yr 3 mo 3 mo 2 yr
CM-0019	Containment pressure monitor Ch. C isolation	GL	S	2	A	CIC	Open/Closed	FS LT S MT LPV	3 mo 2 yr 3 mo 3 mo 2 yr
CM-0020	Containment pressure monitor Ch. D isolation	GL	S	2	A	CIC	Open/Closed	FS LT S MT LPV	3 mo 2 yr 3 mo 3 mo 2 yr

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Table 3.9-13 (76 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Reqd ^(f)	Test Freq ^(g)
CM-0023	Containment H2 sample Ch. A inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-0024	Containment H2 sample Ch. B inlet isolation	GL	S	2	A	CIC	Closed	S FS LT MT LPV	3 mo 3 mo 2 yr 3 mo 2 yr
CM-1013	Containment H2 sample Ch. A outlet isolation	CK	SA	2	A/C	CIC	Closed	S RF LT	RO RO 2 yr
CM-1014	Containment H2 sample Ch. B outlet isolation	CK	SA	2	A/C	CIC	Closed	S RF LT	RO RO 2 yr

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Table 3.9-13 (77 of 95)

Valve No.	Valve Description	Valve Type ^(a)	Valve Act ^(b)	Safety Class ^(c)	Code Cat ^(d)	Valve Funct ^(e)	Safety Position	Test Req'd ^(f)	Test Freq ^(g)
PS-0031	SG 1 blowdown hot leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0032	SG 2 blowdown hot leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0033	SG 1 downcomer sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0034	SG 2 downcomer sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0035	SG 1 blowdown cold leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0036	SG 2 blowdown cold leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0257	SG 1 blowdown hot leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr
PS-0258	SG 2 blowdown hot leg sample isolation	GT	AD	2	B	CIN	Closed	S MT FS LPV	3 mo 3 mo 3 mo 2 yr

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Table 3.9-13 (78 of 95)

Notes:

- (a) Valve Type:
- | | |
|----------------------|--|
| GL - Globe | BF - Butterfly |
| GT - Gate | PK - Packless |
| CK - Check | PL - Plug |
| RV - Relief | POS - Pilot operated safety relief valve |
| BL - Ball | 3W - 3Way |
| BL - Ball | |
- (b) Valve Actuator:
- | | |
|---------------------|------------------------------|
| EL - Electric motor | S - Solenoid |
| SA - Self actuating | EH - Electro-hydraulic |
| AD - Air diaphragm | P - Air operated with Piston |
| M - Manual | |
- (c) Safety Classification as defined in Subsection 3.2.3.
- (d) Valve ASME Code Category A, B, C, or D as defined in ASME OM Code, ISTC 1300.
- (e) Valve Function:
- | | |
|-------|--|
| CIC - | Containment isolation valve as listed in Table 6.2.4-1, which is Type-C leakage rate tested in accordance with ANSI/ANS 56.8 |
| CIN - | Containment isolation valve as listed in Table 6.2.4-1, which is not Type-C leakage rate tested in accordance with ANSI/ANS 56.8 |
| PIV - | Pressure isolation valve |
| TIV - | Temperature isolation valve |
| P - | Passive valves as defined by ASME OM Code, ISTA-2000 are denoted by a P in this column. All other valves are active valves. |

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(f) Required valve tests per ASME OM Code, ISTC and Mandatory Appendix I; and additional required testing:

LT - Valve leakage rate test (per ASME OM Code, ISTC): Subsections ASME OM Code, ISTC for valves with function CIC in (e) above.
Subsection ASME OM Code, ISTC for valves with function PIV in (e) above.

Reactor coolant system PIVs are leakage rate tested in accordance with Technical Specifications Surveillance Requirement 3.4.13.1.

Subsection ASME OM Code, ISTC for Category A valves except the valves with function TIV.

Subsection ASME OM Code, ISTC for valves with function TIV.

LPV - Valve position verification (ASME OM Code, ISTC)

S - Valve stroke exercise in the forward flow direction:
Category A or B (ASME OM Code, ISTC)
Category C (ASME OM Code, ISTC)

RF - Reverse flow exercise for A/C and C valves (ASME OM Code, ISTC). "RF" testing is performed at the same testing frequency as the corresponding "S" test, unless otherwise described.

MT - Valve stroke time test of Category A or B power-operated valves (ASME OM Code, ISTC)

FS - Valves test for fail-safe actuation of Category A or B valves (ASME OM Code, ISTC)

RVT - Relief valve test (ASME OM Code, ISTC)

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- (g) Pump or valve test exclusions, alternatives, and frequency per ASME OM Code, ISTB and ASME OM Code, ISTC. For valves whose test frequency exceeds the normal frequency, see the note (as indicated in parenthesis beside the test frequency) for additional information/justification.

CS - Cold Shutdown

The following condition applies for all testing performed during cold shutdown:

Cold shutdown testing in accordance with the requirements of ASME OM Code, ISTC. See the note for additional information/justification. Valve exercising during cold shutdown commences until all testing is complete or the plant is ready to return to power. A completion of all valve testing is not a prerequisite to return to power. Any testing not completed by the end of one cold shutdown is performed during subsequent cold shutdowns, starting from the last test performed at the previous cold shutdown. In case of frequent shutdowns, testing is not performed more often than once every 3 months.

RO - Refueling Outage.

All refueling outage valve testing is to be completed prior to returning the plant to operation.

RR - Partially stroke valve at or when proceeding to/starting up from cold shutdown. Fully stroke valve during each refueling outage. Some valves may require mechanical exercising or disassembly during each refueling outage to verify operability. All RR testing measures are completed prior to returning the plant to operation.**QC - Partially stroke valve every 3 months. Fully stroke valve during cold shutdown.****EI - Valve operates in the course of plant operation at a frequency that satisfies test requirements. Additional exercising not required provided the test parameters are analyzed and recorded at an operational interval not exceeding the test interval requirement.**

Category A or B (ASME OM Code, ISTC)

Category C (ASME OM Code, ISTC)

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(h) Pump test parameters as defined in ASME OM Code, ISTB-5000:

N -	Speed	V -	Vibration
DP -	Differential Pressure	SPs -	Static Suction Pressure
Q -	Flow Rate	SPo -	Operating Suction Pressure
SPc -	Calculated Suction Pressure		

Note: If ASME OM-ISTB pump tests cannot be performed on the CCW or ESW pumps due to inability to repeat pump tests single-point flow conditions, pump curve testing will be used to assess pump degradation in accordance with ASME OM Code Case OMN-16, Revision 1, as described in Subsection 3.9.6.2.

(i) ~~(Intentionally blank) Typical test configurations for pumps and valves requiring special valve arrangements and/or test connections are shown in Figure 3.9-15. When referenced, these typical test configurations constitute design requirements for the affected pump/valve to be reflected in affected documentation by the COL applicant during later detailed design.~~

(1) Valves: CC-0231, CC-0249, CC-0250

During normal operations, these valves are open to supply/return cooling water to/from the reactor coolant pump (RCP) coolers. Failure of these valves in the closed position could lead to pump damage or failure and force a unit shutdown. Therefore, these valves will be tested during cold shutdown when the RCPs are not operating.

(2) Valves: CC-1099, CC-1100

These valves provide containment isolation and overpressure protection for the component cooling water (CCW) supply and return lines to/from the RCPs (refer to Figure 9.2.2-1). Since these CCW lines are to remain in service during plant operation, it is impractical to perform S or RF testing on the valves on a quarterly test frequency.

The reverse stroke (RF) test of CC-1099 is impractical to perform without isolating CC-1071 and CC-1070, ~~and then pressurizing against the check valve seat in the reverse flow direction via test connection CC-2083. The resultant leakage is then measured through test connection CC-2081.~~ Since this method of testing requires access to areas of high radiation and contamination, a test of this type can be performed only during refueling. This method of testing is the same as will be employed for the ANSI/ANS 56.8-1994 Type-C leakage rate tests. Therefore, LT testing accomplishes and satisfies the reverse flow testing requirements for CC-1099.

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The reverse stroke (RF) test of CC-1100 is impractical to perform without isolating CC-0249 and CC-1085 ~~and then pressurizing against the check valve seat in the reverse flow direction via test connection CC-2086. The resultant leakage is then measured through test connection CC-2086.~~ Since this method of testing requires access to areas of high radiation and contamination, a test of this type can be performed only during refueling. This method of testing is the same as will be employed for the ANSI/ANS 56.8-1994 Type-C leakage rate tests. Therefore, LT testing accomplishes and satisfies the reverse flow testing requirements for CC-1100.

~~Valve CC-1100 is reverse flow stroke tested during Cold Shutdown. With CCW RCP containment supply header supply and return line in service, CC-0249 and CC-1085 are isolated, thus back seating check valve CC-1100 may be then measured via test connection CC-2807. The forward stroke (S) of CC-1100, however, is impractical to perform without isolating CC-0249, CC-1084, and CC-1085, while keeping CC-0250 open and injecting a test flow through test connection CC-2806. The resultant out leakage is then measured at test connection CC-2808. Since this valve testing methodology requires containment entries to areas of high radiation and contamination, the forward stroke testing of CC-1100 will be performed during refueling.~~

- (3) Valves: CC-0143, CC-0144, CC-0145, CC-0146, CC-0147, CC-0148, CC-0149, CC-0150

These valves close on receipt of a safety injection actuation signal to isolate the non-essential component cooling water (CCW) loops. The non-essential cooling loops provide cooling of the non-essential chillers. When ~~plant chilled water (PCW)~~ is secured for testing of ~~PCW~~ valves and ~~Division 1~~ non-essential header CCW valves ~~CC-0143, CC-0145, CC-0147, and CC-0149~~ may then be stroke tested. These valves will use the same test frequency as the ~~PCW~~ valves, as described in (28).

The Division 1 non-essential CCW header services the letdown heat exchanger in addition to the Division 1 non-essential chillers. Closing the Division 1 non-essential CCW header valves during plant operation could result in unnecessary reactor coolant system transients. Also, failure to cool the high temperature letdown flow leaving the regenerative heat exchanger can lead to cavitation at the letdown orifices, which has been known to cause line failure. Therefore, valves ~~CC-0143, CC-0145, CC-0147, and CC-0149~~ will be tested during cold shutdown.

- (4) Valves: CC-0296, CC-0297, CC-0301, CC-0302

These valves isolate cooling water to/from the letdown heat exchanger and close on a containment isolation actuation signal. For reasons stated in Note (3) above, testing these valves during normal operations is not practical. Therefore, these valves will be tested during cold shutdown.

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(5) Valves: CC-1685, CC-1686

These valves provide containment isolation and overpressure protection for the component cooling water (CCW) supply and return lines to/from the letdown heat exchanger (refer to Figure 9.2.2-1 (4 of 4)). Since these CCW lines are to remain in service during plant operation, it is impractical to perform S or RF testing on the valves on a quarterly test frequency.

Valve CC-1685 is forward stroke tested during cold shutdown ~~by isolating CC 0297 while keeping CC 0296 open to allow a CCW header pressure to stroke CC 1685.~~ The reverse stroke (RF) test of CC-1685, however, is impractical to perform without isolating CC-0297, CC-1683, and CC-1681; ~~and then pressurizing against the check valve seat in the reverse direction via test connection CC 2663. The resultant leakage is then measured through test connection CC 2662.~~ Since this method of testing requires access to areas of high radiation and contamination, a test of this type can be performed only during refueling. This method of testing is the same as will be employed for the ANSI/ANS 56.8-1994 Type-C leakage rate tests. Therefore, LT testing accomplishes and satisfies the reverse flow testing requirement for CC-1685.

Valve CC-1686 is reverse flow stroke tested during cold shutdown. ~~With CCW letdown supply and return lines in service, CC 0301 and CC 1682 are isolated, thus backseating check valve CC 1686 against CCW header pressure. Any leakage past CC 1686 may then be measured via test connection CC 2667.~~ The forward stroke (S) of CC-1686, however, is impractical to perform without isolating CC-0301, CC-1682, and CC-1684, ~~while keeping CC 0302 open and injecting a test flow through test connection CC 2666. The resultant outleakage is then measured at test connection CC 2668.~~ Since this valve testing methodology requires containment entries to areas of high radiation and contamination, the forward stroke testing of CC-1686 will be performed during refueling.

(6) Valves: CV-255

This valve isolates seal injection water to the RCP seals. Valve closure during normal operations with the RCPs operating would result in damage to pump seals. Therefore, this valve will be tested during cold shutdown when the RCPs are not operating.

(7) Valves: CV-505, CV-506

These valves close on receipt of a containment spray actuation signal to isolate the RCP **seal return** line. During normal operations, these valves are open to maintain seal injection flow across the RCP seals. Closure of these valves during normal operations would inhibit seal water flow across the RCP seals, which would result in damage to the pump seals. Therefore, these valves will be tested during cold shutdown when the RCPs are not operating.

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(8) Valves: CV-515, CV-516, CV-522, CV-523

These valves are normally open to pass letdown flow from the RCS to the chemical and volume control system (CVCS). Stroking these valves during normal operations could result in unnecessary RCS transients. In addition, these valves are subjected to high stresses when cycled due to the high-pressure environment in which they operate. Repeated cycling of the valves at this high pressure could severely affect valve integrity over the expected operating life of the valves. In addition, failure of these valves in the closed position could result in a loss of pressurizer level control, forcing a unit shutdown. Therefore, these valves will be tested during cold shutdown when the effects of valve operation are minimized. Globe valve CV-515 performs a temperature isolation valve (TIV) function. This valve isolates the letdown line on a high temperature, as sensed downstream of the letdown heat exchanger by dedicated temperature monitors (refer to Figure 9.3.4-1, Sheet 1).

The setpoints of these temperature monitors and associated valve isolation actuation circuitry are such that the design temperature limits of the interfacing CVCS piping and components will not be exceeded prior to the closure of CV-515. Temperature monitors are also used to evaluate the integrity of CV-515 in this closed position. Each refueling outage, an integrity evaluation of CV-515 is performed by isolating the letdown line using CV-515, and then subjecting the valve to reactor coolant system pressure and temperature and analyzing the resultant temperature differential across the valve over time. RCS pressure and temperature may be actually lower than plant at-power RCS pressure and temperature levels to avoid valve duty stress, provided these parameters are analyzed and extrapolated to full RCS pressure and temperature.

(9) Valves: CV-524

This valve functions as a containment isolation valve and isolates charging flow to the RCS. During normal operations, this charging flow is used to cool the letdown flow in the regenerative heat exchanger and to provide makeup to the RCS. ~~For reasons stated in Note (3), it is not practical to test this valve during normal operations.~~ In addition, failure of this valve in the closed position could result in a loss of pressurizer level control, forcing a unit shutdown. Therefore, this valve will be tested during **refueling because it is not practical to test during normal operation and cold shutdown.**

(10) Valves: CV-747

This valve functions as a containment isolation valve. Testing requires that charging flow be isolated. As stated in Note (9) above, this is not practical during normal operations. Therefore, this valve will be tested during **refueling.**

(11) Valves: CV-835

This valve functions as a containment isolation valve. Testing requires that seal injection to the RCPs be isolated. As stated in Note (6), this is not practical during normal operations. Therefore, this valve will be tested during cold shutdown.

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- (12) Valves: RG-0410, RG-0411, RG-0412, RG-0413, RG-0414, RG-0415, RG-0416, RG-0417

These valves are closed during normal plant operations to maintain the reactor coolant pressure boundary (RCPB). These valves are active valves and are designed to be used during a safety-grade cooldown of the RCS. Opening these valves during normal operation leaves only one Class 1 valve, which does not maintain the RCPB according to 10 CFR 50.2 and ANSI/ANS 51.1 definitions. While there is a third valve downstream of the two reactor coolant gas vent system (RCGVS) valves, the piping and the third valve are Class 2. In order to maintain the integrity of the RCPB, these valves are to be tested during plant shutdown periods only and not during reactor operation.

These valves will be tested as cold shutdown valves.

- (13) Valves: FW-0121, FW-0122, FW-0123, FW-0124, FW-0131, FW-0132, FW-0133, FW-0134

These valves isolate main feedwater to the SGs upon receipt of a main steam isolation signal (MSIS). Closure of these valves during normal operations would isolate feedwater to the SGs, which may result in a severe transient in the SG and a unit trip. Therefore, these valves will be tested during cold shutdown.

- (14) Valves: MS-011, MS-012, MS-013, MS-014, MS-090, MS-091, MS-092, MS-093

These valves are main steam isolation valves (MSIVs) and main steam drip leg isolation valves, which isolate the main steam lines upon receipt of an MSIS. Performance of either a full-stroke or partial-stroke test during normal operations may cause severe transients in the main steam lines and result in a unit trip. The valves will therefore be full stroke tested on a cold shutdown frequency basis, but with the unit in Mode 3 and at operating temperature and pressure to replicate design conditions under which valve closure is to be achieved.

- (15) Valves: SI-568, SI-569

These valves are too close to prevent reverse flow when either the SC/CS pumps are used to provide containment spray or to provide shutdown cooling flow. These valves are tested by operating the SC/CS pump in any train, opening the discharge crossover isolation valve between the two systems, and isolating the suction of the off-line pump. Closure of the check valve on reverse flow in the discharge of the off-line pump is verified by monitoring pressure increase upstream of the valve.

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(16) Valves: SI-113, SI-133, SI-404, SI-405, SI-434, SI-446, SI-522, SI-523, SI-532, SI-533, SI-540, SI-542

Check valves SI-113, SI-133, SI-404, SI-405, SI-434, SI-446, SI-540, and SI-542 are to be provided with sufficient flow from the SI pumps to stroke to their full-open position. The flow for stroke testing these valves passes through the DVI nozzles and into the RCS. The SI pump discharge pressure is not sufficient to overcome normal RCS operating pressure. In addition, any flow from safety injection through these valves and into the RCS during power operations would produce an undesirable temperature transient at the DVI nozzles. The valves are also not full or partial stroked during cold shutdown, since this may result in low-temperature overpressurization of the RCS. Since it is impractical to full stroke test these check valves during plant operation or to perform full/partial stroke test during cold shutdown conditions, these valves are full stroke tested each refueling outage.

Check valves SI-520, SI-522, SI-523, SI-532, and SI-533 are to be provided with sufficient flow from the SI pumps to stroke to their full-open position. The flow for stroke testing these valves passes through the RCS hot legs (hot leg injection). The SI pump discharge pressure is not sufficient to overcome normal RCS operating pressure. In addition, any flow from safety injection through these valves and into the RCS during power operations would produce an undesirable temperature transient at the shutdown cooling line connections to the hot legs. The valves are also not full or partial stroked during cold shutdown, since this may result in low-temperature overpressurization of the RCS. Since it is impractical to full stroke test these check valves during plant operation or to perform full/partial stroke test during cold shutdown conditions, these valves are full stroke tested each refueling outage.

Check valves SI-113 and SI-133 are not reverse flow tested quarterly, since testing of these valves during power operations would require containment entries by plant personnel to high-radiation and airborne contamination areas. These valves are not reverse flow tested every cold shutdown because of the extensive test equipment setup, which could extend the cold shutdown. These valves are reverse flow tested during refueling.

(16A) Valves: SI-404, SI-405, SI-434, SI-446

These valves are reverse flow tested by pressurizing the volume of piping between these valves and their respective SI pump discharge maintenance isolation valve (SI-476, SI-478, SI-435, and SI-447) with water, and using either pressure decay or volumetric analysis to determine valve reverse seating function.

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- (17) Valves: SI-123, SI-143, SI-541, SI-543, SI-168, SI-178

Check valves SI-123, SI-143, SI-541, SI-543, SI-168, and SI-178 are to be provided with sufficient flow to stroke to their full-open position. This test flow ultimately passes through the DVI nozzles and into the RCS. Neither the SI nor the SC/CS pump discharge pressures are sufficient to overcome normal RCS operating pressure in order to establish the flow required to perform a partial or full stroke test of these valves. In addition, any flow from safety injection or shutdown cooling to the RCS during power operations would produce an undesirable temperature transient at the DVI nozzles. During cold shutdown, the SI pumps may not be used for stroke testing these valves, because this could result in low-temperature overpressurization of the reactor vessel. A full flow stroke test of these valves during cold shutdown is achievable by use of the SC/CS pumps.

Valves SI-123 and SI-143 are not reverse flow tested quarterly, since testing of these valves during power operations would require containment entries by testing personnel to high radiation and airborne contamination areas. These valves are not reverse flow tested every cold shutdown because of the extensive test equipment setup which could extend the cold shutdown. These valves are reverse flow tested during refueling.

- (18) Valves: CS-1007, CS-1008, CS-1014

These valves are required to open to pass flow from the containment spray (CS) pumps to the containment atmosphere. These valves cannot be stroked open with CS flow, since this would result in spraying down containment. These valves will be equipped with external means to exercise the valve obturator and to measure the force required to exercise the valve open and closed (this performs both the S and RF test). Since the valves are located in a containment area subject to moderate to high radiation and contamination levels, the valves will be exercised each refueling outage, instead of during cold shutdown or plant operation (every 3 months).

- (19) Valves: SI-215, SI-225, SI-235, SI-245

These SIT outlet check valves are to be provided with sufficient flow from the SITs to the RCS to stroke to their full-open position. During normal operations, the SI tanks are not capable of providing flow to the RCS, due to RCS pressure and tank pressure limitations. Also, providing flow to the DVI nozzles during plant operations would cause undesirable temperature transients at the DVI nozzles. The SITs may be used, however, to provide flow to partially stroke these valves, with minimal temperature transient impact to the DVI nozzles, when proceeding to or starting up from cold shutdown. In this configuration, a full-flow stroke test is impractical due to significant inventory additions to the RCS should the SIT water level become too low. During refueling and with the reactor head removed, full-flow testing of these valves is practical. In this condition, SIT flow may be obtained, which is sufficient to full stroke the SIT outlet check valve, with minimal risk of injecting nitrogen into the RCS. Therefore, these valves will be partially stroke tested during cold shutdown and full-stroke tested during refueling.

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(20) Valves: SI-217, SI-227, SI-237, SI-247

Providing flow to the DVI nozzles in order to stroke these check valves during plant operation is not practicable, since RCS pressure during normal operations is significantly higher than the discharge pressures of the SI pumps, SC/CS pumps, or SITs. In addition, any flow from these sources to the RCS during power operations would produce an undesirable temperature transient at the DVI nozzles.

Check Valves SI-217 and SI-237:

Full-stroke testing of these check valves is not practical at cold shutdown for several reasons. First, SI pumps 4 and 3 are not capable of providing sufficient flow to full stroke their respective DVI check valve (SI-217/SI-237). Secondly, such use of SI pumps during cold shutdown condition is not practical, since it could result in low-temperature overpressurization of the reactor vessel. Thirdly, use of water inventory from their respective SITs to full-stroke test these check valves during cold shutdown when RCS pressure is low is impractical, because of the risk of injecting nitrogen into the RCS, and because the RCS is not capable of accepting the added SIT inventory from a full-stroke test.

However, a partial-stroke test of these check valves may be achieved with minimal temperature transient impact to their respective DVI nozzles, when proceeding to or starting up from cold shutdown, by use of water inventory from their respective SITs to establish flow through these valves. During refueling and with the reactor head removed, full flow testing of these valves is practical. In this condition, SIT flow may be obtained that is sufficient to full stroke the respective DVI check valve, with minimal risk of injecting nitrogen into the RCS. Therefore, these valves will be partially stroke tested during cold shutdown and full-stroke tested during refueling.

Check Valves SI-227 and SI-247:

These check valves have the same testing limitations as SI-217 and SI-237, above, except that a full-stroke test of the check valves is practical during cold shutdown by operating their respective SC/CS pump. SI-227 and SI-247 are tested as cold shutdown valves.

(21) Valves: SI-302, SI-303

Closing of these valves to perform stroke testing renders both SI pumps in the respective valve trains inoperable, which is in violation of Technical Specifications 3.5.2 and 3.5.3. Technical Specification 3.5.3, however, allows inoperability of both train SI pumps during refueling subject to prescribed RCS parameters.

(22) Valves: SI-424, SI-426, SI-448, SI-451

Each of these valves is reverse flow tested by isolating its associated pump and operating the other divisional SI pump in miniflow to provide reverse flow against the tested valve. In this test alignment, the operating pump is to remain in miniflow condition, fully capable of supplying design basis accident flow. Procedural measures are implemented so that only one train SI pump will be inoperable (i.e., the isolated SI pump).

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(23) Valves: CV-362, CV-363

These valves function as containment isolation valves and isolate shutdown cooling purification line. The valves are in the closed position during normal operation and open during shutdown cooling purification. Therefore, these valves will be tested during cold shutdown. To provide reasonable assurance of the operability of CV-363 for its containment isolation function, this valve is reverse flow tested. Reverse flow testing of CV-363 is not practical quarterly, since during unit operation, opening of CV-362 or other venting path could result in an inter-system LOCA.

The appropriate interval for such testing is during cold shutdown when the shutdown purification line is secured prior to unit startup.

(24) Valves: SI-614, SI-624, SI-634, SI-644

These valves are to be open to pass flow from the SITs to the RCS. Technical Specifications do not permit testing these valves during normal operation since all four SITs are to be operable. Normal shutdown/startup procedures require these valves to be closed when proceeding to cold shutdown and to be opened when starting up from cold shutdown. Testing of these valves will be performed at this time.

(25) Valves: SI-651, SI-652, SI-653, SI-654, SI-655, SI-656

These valves are to open to align the SC/CS pump suction to the RCS. These valves are interlocked such that they cannot be opened when RCS pressure is above the operating pressure of the SCS. Therefore, these valves cannot be tested during normal operations. Testing will be performed during cold shutdown when valves can be manipulated.

(26) Valves: VQ-0011, VQ-0012, VQ-0013, VQ-0014

These valves are to close on receipt of a CIAS to perform their containment isolation function. During normal operations, these valves are closed and Technical Specifications do not permit opening. Therefore, these valves will be tested during cold shutdown.

(27) Valves: SD-1115, SD-1116

These valves are to close on reverse flow in the SG wet layup recirculation line to perform their containment isolation function. The recirculation lines are isolated during normal operations and are only used when the SGs are in wet layup conditions such as during cold shutdown. Therefore, these valves will be tested during cold shutdown when the recirculation system is stopped.

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(28) Valves: WI-012, WI-013, WI-015

During normal operations, these valves are open provide plant chilled water (PCW) to the containment. Stroke testing of any one of these valves will require interruption of at least one division of PCW to the containment. To maintain containment air temperatures within the 120 °F Technical Specifications limit year-round, the containment coolers are required to operate with the two units in standby. There may be periods during the year, however, when two out of four containment cooler operations (one PCW division operating, one PCW division secured) provides sufficient cooling to maintain containment temperature within the Technical Specifications limit, due to less severe site climate and heat sink characteristics (e.g., non-summer months). For these periods of the year, the valves will be stroke tested quarterly.

For other periods of the year during which at least two of the four containment coolers are to be kept in operation to maintain containment temperature within the 48.9 °C (120 °F) Technical Specification limit, the valves will be tested as cold shutdown valves.

(29) Valves: FW-1035, FW-1036, FW-1037, FW-1039, FW-1040, FW-1042, FW-1043, FW-1044, FW-1046, FW-1047

These main feedwater system check valves are located on the feedwater inlet lines to the steam generators. These check valves have only a safety function to close. Since these valves are to remain open during power operations to maintain steam generator level and prevent reactor trip and plant shutdown, quarterly reverse flow testing is impractical. As described in Section 10.4.7 and Figure 10.4.7-1, the feedwater split between the economizer feedwater lines and the downcomer feedwater line always maintains some flow through the downcomer feedwater line, even though the two economizer feedwater lines are sized to collectively provide 100 percent required flow to the steam generator they service. The 10 percent of required steam generator flow that passes through the downcomer line at full-power operation is used to maintain the downcomer line at a constant temperature to protect the line from thermal transient (water hammer) damage. Thus, the downcomer feedwater line may not be isolated during power operations in order to perform a reverse flow test on its feedwater check valves. Flow testing of these valves is performed on a cold shutdown (CS) frequency basis while the plant is in Mode 3 (hot standby), at which condition adequate steam generator pressure exists to perform reverse flow tests on the valves.

(30) (Intentionally Blank) Valves: ~~DS 112, DS 117, DS 118, DS 122, DS 127, DS 128, DS 212, DS 217, DS 218, DS 222, DS 227, DS 228~~

~~These valves are tested by isolating one of the starting air receiver tanks and starting the diesel generator using the remaining operational tank to direct full flow through the tested valves. In addition to the diesel generator starting using the one air receiver tank, positive means in accordance with KEPIC MOC are provided to verify conclusively that check valves DS 117, DS 118, DS 127, DS 128, DS 217, DS 218, DS 227, and DS 228 stroke open. Positive means are also employed to verify reverse flow seating in accordance with KEPIC MOC for check valves DS 112, DS 117, DS 118, DS 122, DS 127, DS 128, DS 212, DS 217, DS 218, DS 222, DS 227, and DS 228.~~

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- (31) Valves: SI-605, SI-606, SI-607, SI-608, SI-613, SI-623, SI-633, SI-634

These solenoid valves are both stroke tested (S) and fail-safe tested (FS) during cold shutdown because opening any of these valves will result in depressurizing the affected SIT, thus causing the SIT to be inoperable. These valves cannot be tested during plant operations, since plant Technical Specification 3.5.1 requires all SITs to remain operable in Mode 1 (power operations). Technical Specification LCO 3.5.1 (required action) for inoperability of any SIT requires restoration of that SIT to operable status in one hour, or commence unit shutdown. Since this LCO is too stringent to allow valve stroke or fail-safe testing of these valves during plant operations, this testing will be performed during cold shutdown.

- (32) Valves: ~~FP-0030~~, FP-1440

The safety function of valves ~~FP-0030 and~~ FP-1440 in the forward stroke direction is to relieve thermal pressure to the containment fire water supply piping and thus prevent damage to the containment penetration as a result of containment heatup following a LOCA. It is impractical to perform a forward stroke test for check valves ~~FP-0030 and~~ FP-1440 during power operations or cold shutdown for several reasons: significant radiation and contamination exposure to test personnel in containment, the necessity of disabling the sprinkler system within containment to perform the test, which jeopardizes system response to containment fire, and the extensive restoration/draining of the fire supply headers inside of containment post-testing to their normal “dry” status, which would result in extending the cold shutdown.

The reverse flow safety function is containment isolation. Reverse flow testing of these check valves is impractical during power operations or cold shutdown for several reasons: significant radiation and contamination exposure to test personnel in containment, the necessity of disabling the sprinkler systems to fill the “dry” fire water supply piping in the reverse flow test volume in order to establish backpressure on the check valve seat, which jeopardizes system response to containment fire, and the extensive restoration/draining of the fire supply headers inside of containment post-testing to their normal “dry” status, which would result in extending the cold shutdown.

- (33) Valves: WM-1752

The safety function of valve WM-1752 in the forward stroke direction is to relieve thermal pressure to the containment demineralized water piping as a result of containment heatup following a LOCA. Verification of this safety function requires forward stroke testing, and use of demineralized water within containment. However, during power operations and cold shutdown, there are no users of demineralized water within containment to establish this flow, without necessitating containment entry to areas of high radiation dose and airborne contamination present during power operations and cold shutdown to manipulate manual valves at decontamination sinks, etc. The forward stroke test will be performed during refueling for ALARA purposes. Similarly, the RF test will require containment entry to areas of high radiation dose and airborne contamination present during power operations and cold shutdown. For ALARA purposes, this test will be performed during refueling.

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- (34) Valves: IW-0001, IW-0002, IW-0003, IW-0004

Valves IW-0001 and IW-0002 are motor-operated holdup volume tank (HVT) flooding valves; valves IW-0003 and IW-0004 are reactor cavity flooding valves. The valves are normally closed and remain closed throughout the recovery period of any design basis accident. The valves are opened either individually or simultaneously only for a severe accident, which requires flooding of the reactor cavity in the event of the reactor vessel breach. The opening of the valves allows water to flow from the IRWST to the reactor cavity to cover core debris. Operability of the valves is not required for shutting down the reactor, maintaining cold shutdown, or mitigating the consequences of any design basis accident.

Testing of the HVT flooding valves requires that the manual valves located upstream be closed to prevent the flow of water from the IRWST to the HVT. Closing the manual valves is not practical during operations at power because containment entry would be required. The reactor cavity flooding valves are not tested during operations at power because inadvertent actuation of the valves would result in the simultaneous opening of the reactor cavity flooding valves and the HVT flooding valves. Even though the IRWST water volume is designed to prevent from breaching the reactor vessel, abnormal condition which results in flooding the HVT and the reactor cavity should be prevented. The HVT flooding valves and the reactor cavity flooding valves will be tested during each refueling outage. This will limit personnel radiation exposure and prevent the simultaneous opening of the reactor cavity flooding valves and the HVT flooding valves.

- (35) Valves: SI-612, SI-619, SI-622, SI-629, SI-632, SI-639, SI-642, SI-649

These air-operated SIT nitrogen pressure control valves are stroked in the course of plant operation as a matter of normal operation and pressure control of the SITs at a frequency that satisfies test requirements of quarterly testing. Fail-safe (FS) actuation on a 3-month basis, however, is impractical during plant operations (quarterly test frequency) or cold shutdown because such testing involves entries to containment to proximity of the SITs (high radiation dose and airborne contamination area) to fail air to the air diaphragm valve actuators. Therefore, the FS test for these valves will be performed on a refueling outage basis for ALARA purposes.

- (36) Valves: SI-322, SI-332, SI-611, SI-618, SI-621, SI-628, SI-631, SI-638, SI-648, SI-661, SI-670

These air-operated valves are stroked on a quarterly frequency. Fail-safe (FS) actuation testing on a 3-month basis; however, is impractical during plant operations (quarterly test frequency) or cold shutdown because such testing involves entries to containment to proximity of the SITs (high radiation dose and airborne contamination area) to fail air to the air diaphragm valve actuators. Therefore, the FS test for these valves will be performed on a refueling outage basis for ALARA purposes.

- (37) Although these emergency diesel generator support system components are Safety Class 3, they are procured, tested, and maintained as part of the emergency diesel generators themselves, which are tested for operability and reliability by the plant Technical Specifications. Therefore, these components are tested by Technical Specifications Surveillance Requirements of Technical Specification Section 3.8.

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Table 3.9-13 (93 of 95)

- (38) Pressure isolation valves (PIVs) are not reverse flow tested quarterly, since testing of these valves during power operation would require containment entries to high radiation and airborne contamination areas. PIVs are not reverse flow tested every cold shutdown, because of the extensive test equipment setup, which could extend the cold shutdown. The RF function is verified, however, by leakage testing each valve in the reverse flow direction during unit startup for the testing frequency outlined in Technical Specification Surveillance Requirement 3.4.13.1. This surveillance requirement states that leakage testing of these valves is required every 18 months and prior to entering Mode 2 whenever the plant has been in Mode 5 (cold shutdown) for 7 days or more, if leakage testing has not been performed in the previous 9 months and within 24 hours following valve actuation due to automatic or manual action or flow through the valve(s).

- (39) Inservice Testing/Monitoring for Valves on Piping Connected to the Steam Generator Secondary Side

Steam generator (SG) main steam isolation valves and SG main steam isolation bypass valves are tested for gross leakage each refueling outage. Testing is performed by isolating these valves with the steam generators under steam pressures created by normal startup/shutdown and measuring downstream steam header pressure and temperature.

SG main steam safety valves are tested each refueling outage for gross leakage by means of walkdown/temperature/acoustic monitoring with main steam lines pressurized.

SG atmospheric dump valves (ADV) are tested for gross leakage each refueling outage by temperature/acoustic monitoring of the ADV lines downstream of the ADVs with main steam lines pressurized.

Steam generator blowdown valves are tested for gross leakage each refueling outage. Testing is performed by isolating these valves individually against steam generator pressure and then monitoring the steam generator blowdown tank for an increase in tank level, which would be indicative of gross valve leakage.

Steam generator sampling line valves are tested for gross leakage each refueling outage. Testing is performed by isolating these valves individually against steam generator pressure and then monitoring sample line flow for gross valve leakage.

Main feedwater containment isolation valves are tested for gross leakage each refueling outage. Testing is performed by individually subjecting these valves to steam generator pressure experienced during unit startup/shutdown, and then measuring resultant valve leakage through the provided test connection. The startup feedwater pump may be used for establishing and maintaining steam generator inventory for this gross leakage test.

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Table 3.9-13 (94 of 95)

Auxiliary feedwater (AF) containment isolation valves are tested for gross leakage each refueling outage. The AF isolation check valves are leakage tested by individually subjecting these valves to steam generator pressures experienced during unit startup/shutdown and then measuring resultant valve leakage through the provided test connection. The outside-containment AF isolation valves are leakage tested by pressurizing the piping between these valves and their inside-containment containment isolation check valves while the steam generators are at startup/shutdown pressures. Valve leakage is then measured through the provided test connection. These AF valves also employ installed temperature instrumentation to detect leakage past these valves.

(40) Safety Injection System

For inservice testing of the safety injection pumps during refueling outages, a walkdown visual examination of safety injection system piping and components outside containment will be conducted to verify the leak-tight integrity of the system.

(41) Valves: CV-576, CV-577

These valves limit charging flow to RCS. ~~It is not practical to test these valves during normal operations.~~ In addition, failure of these valves in the closed position could result in a loss of pressurizer level control. Therefore, these valves will be tested during ~~refueling because it is not practical to test during normal operation and cold shutdown.~~

(42) Valve: PX-1005

This valve is installed to isolate the containment building and protect the overpressure of sample collecting piping of the post-accident primary sampling system (Figure 9.3.2-1). PX-1005 is closed for normal plant operation, and the right-direction and reverse-direction stroke test of PX-1005 is operated by using test-fitting. The right-direction and reverse-direction stroke test of PX-1005 is not operated every quarter because an operator has to enter the high-radiation and radiation contamination air-particle areas in the containment building during power operations. This valve is not tested during cold shutdown because cold shutdown can be extended by the installation of test equipment but tested during refueling operation.

(43) Valve: PX-1020

This valve is installed to isolate the containment building of sample collecting piping of containment atmosphere (Figure 9.3.2-1). PX-1020 is closed for normal plant operation, and the right-direction and reverse-direction stroke test of PX-1020 is operated by using test-fitting. The right-direction and reverse-direction stroke test of **PX-1020** is not operated every quarter because an operator has to enter the high-radiation and radiation contamination air-particle areas in the containment building during power operations. This valve is not tested during cold shutdown because cold shutdown can be extended by the installation of test equipment but tested during refueling operation.

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Table 3.9-13 (95 of 95)

- (44) Valves: AF-1003A, AF-1003B, AF-1004A, AF-1004B, AF-1007A, AF-1007B, AF-1008A, AF-1008B

When auxiliary feedwater (AF) system operation is required, these valves are to open to provide flow to the steam generators (SGs).

Testing of these valves requires AF injection into the SGs, which is not practical during normal operations due to the effects of thermal shock to the SG feedwater nozzles and potential overcooling of the RCS. Testing during cold shutdown is not desirable because the SG is in wet layup conditions. Therefore, these valves will be tested following cold shutdown prior to entering Mode 2, which allows normal SG water levels to be established and the system aligned for standby readiness.

~~Reverse flow for reverse flow testing of valves AF 1004A, AF 1004B, AF1003A, and AF 1003B is obtained from operating the motor driven AF pump in the opposite division as the tested valve and manipulating manual crossover valves AF 2330D, AF 2330C, AF 2330A, and AF 2330B, as appropriate, to align flow from the motor driven AF pump to the valve under test.~~

Reverse flow for reverse flow testing of valves AF-1008A, AF-1008B, AF-1007A, and AF-1007B is obtained by opening AF pump to AF isolation valves AF-0043, AF-0044, AF-0045, and AF-0046, respectively.

- (45) Valves: AF-0043, AF-0044, AF-0045, AF-0046

Gate valves AF-0043, AF-0044, AF-0045, and AF-0046, similarly provide the high/low-temperature interfaces between main feedwater system piping (design temperature: 570 °F) and the auxiliary feedwater system piping (design temperature: 140 °F), as illustrated in Figure 10.4.9-1, Sheet 1. These valves remain open during plant operation, but in the case of the backleakage into the auxiliary feedwater system piping, which can result in exceeding piping design temperature and steam binding of the auxiliary feedwater pumps (Re: Response to Generic Safety Issue 093), these valves close and leakage through check valves is tested. Dedicated temperature monitors, which alarm to the control room, are located upstream of these valves and are used to detect any high-temperature backleakage from the main feedwater system. The setpoints of these temperature monitors and associated alarms will be such that the design temperature limit of the interfacing auxiliary feedwater system piping will not be exceeded prior to the initiation of the alarm.

- (46) Valve: RC-0385, RC-0386

If POSRVs open with POSRV discharge path to the S/G compartments for testing of RC-0385 and RC-0386, reactor coolant will be discharged to the S/G compartments and the containment will be under radioactive contamination environment. This condition limits containment entries by plant personnel when the valves or their indication fail during the testing of RC-0385 and RC-0386. Therefore, testing will be performed during refueling for ALARA purposes.

- (47) Valve: FC-1145

Testing of the check valve FC-1145 is not performed quarterly since testing of this valve during power operations would require containment entries by plant personnel to high-radiation and airborne contamination areas. Therefore, forward and reverse stroke tests of this valve are performed during refueling.

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flow paths can be measured periodically to verify that flow is in accordance with the design specification.

The safety-related pumps and piping configurations accommodate in-service testing at a flow rate at least as large as the maximum design flow for the pump application. The safety-related pumps are provided with instrumentation to verify that net positive suction head available (NPSHA) is greater than or equal to the net positive suction head required (NPSHR) during all modes of pump operation. These pumps can be disassembled for evaluation when ASME OM Code, ISTB testing results in a deviation that falls within the required action range. The code provides criteria limits for the test parameters identified in Table 3.9-13. The detailed IST program establishes the frequency and the extent of disassembly and inspection based on suspected degradation of all safety-related pumps, including the basis for the frequency and the extent of each disassembly. Factors to be considered in the frequency and extent of disassembly include, but are not limited to the following:

- a. Historical performance of the pump to identify pumps that are prone to degradation/wear.
- b. Analysis of trends of pump test parameters and service conditions.
- c. Analysis of pump components that are subject to aging and require a maintenance replacement approach (e.g., O-rings).
- d. Results of non-intrusive pump testing. The non-intrusive technologies used may obviate the need for inspection/disassembly of safety-related pumps, provided the technologies demonstrate an equivalent ability to detect pump degradation as inspection/disassembly would.

The testing requirements and acceptance criteria are identified in ISTB-5000.

The program may be revised throughout the plant life to minimize disassembly based on disassembly experience.



A

If ASME OM Code, ISTB pump tests cannot be performed on the component cooling water (CCW) or essential service water (ESW) pumps due to inability to repeat pump test at single point flow conditions, pump curve testing will be used to assess pump degradation in accordance with ASME OM Code Case OMN-16, Revision 1. The following provisions shall be complied with in the use of pump curve testing for the CCW/ESW pumps:

- a. Pump curves are developed, or manufacturer's pump curves are validated, when the pumps are known to be operating acceptably.
- b. The reference points used to develop or validate the curve are measured using instruments at least as accurate as required by the code.
- c. Pump curves are based on an adequate number of points, with a minimum of five.
- d. Points are beyond the "flat" portion (low flow rates) of the curves in a range which includes or is as close as practicable to design basis flow rates.
- e. Acceptance criteria based on the curves does not conflict with Technical Specifications or FSAR design bases.
- f. If vibration levels vary significantly over the range of pump conditions, a method for assigning appropriate vibration acceptance criteria should be developed for regions of the pumps curve.
- g. When the reference pump curve may have been affected by repair, replacement, or routine service, a new reference curve shall be determined or the previous curve revalidated by an inservice test.

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Table 2.4.1-2 (1 of 2)

Reactor Coolant System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Reactor Vessel	RV	1	I	-/Yes	-/-(²)	-/-	-	-	-
Steam Generator (primary/secondary)	SG # 1&2	1	I	-/Yes	-/-	-/-	-	-	-
Pressurizer	PZR	1	I	-/Yes	-/-	-/-	-	-	-
Reactor Coolant Pumps	RCP 1A, 1B 2A, 2B	1	I	No/Yes	Yes/Yes	Yes/Yes	-(²)	-	-
PZR Backup Heaters	Bank No.1, No.2	1	I	Yes/Yes	Yes/Yes	Yes/Yes	PPCS, PLCS	-	Open/Closed
Pilot Operated Safety Relief Valves (POSRVs) Main Valves	RC-200, 201 202, 203	1	I	-/Yes	Yes/Yes	-/-	-	Open/Close	
POSRV Motor Operated Isolation Valves (MOV)	RC-120, 121 122, 123 124, 125 126, 127	1	I	Yes	No/Yes	Yes/Yes	-/-	Closed	As Is
POSRV Double Motor Operated Pilot Valves (MOV)	RC-130, 131 132, 133 134, 135 136, 137	1	I	Yes(³)/Yes	Yes/Yes	-/-	-	Open/Close	As Is
POSRV Spring- Loaded Pilot Valves	RC-300, 301 302, 303 304, 305 306, 307	1	I	-/Yes	Yes/Yes	-/-	-	Open/Close	

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Table 2.4.2-2 (1 of 2)

In-containment Water Storage System Component List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
In-Containment Water Storage Tank (IRWST)	IW-TK01	-	I	-	-	-	-	-	-
Holdup Volume Tank (HVT)	IW-TK02	-	I	-	-	-	-	-	-
IRWST Sump Strainers	IW-ST01A/B/C/D	-	I	-	-	-	-	-	-
Swing Panel	IW- SP01A/B/C/D, SP02A/B/C/D, SP03A/B/C/D	-	I	-	-/Yes	-/Yes	-	Open	-
Tri-Sodium Phosphate (TSP) Baskets	-	-	I	-	-	-	-	-	-
HVT Spillway Isolation Valves (MOV)	IW-V001, 002	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Closed/Open	As Is
Reactor Cavity Spillway Isolation Valves (MOV)	IW-V003, 004	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Closed/Open	As Is
HVT Manual Isolation Valves	IW-V1001, 1002	2	I	No/No	-	-	-	Open	-

Closed

Reactor Cavity
Flooding ValvesHVT Flooding
Valves

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Table 2.4.2-2 (2 of 2)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Boric Acid Make-up Pump Suction Piping Containment Isolation Valves (MOV)	IW-V005, 006	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	As Is
IRWST Level Instrument Isolation Valves (SOV)	IW-V010, 011, 022, 023, 024, 025, 026, 027	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
HVT Level Instrument Isolation Valves (SOV)	IW-V012, 013, 014, 015, 016, 017, 028, 029, 030, 031	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open
Reactor Cavity Level Instrument Isolation Valves (SOV)	IW-V018, 019, 020, 021, 032, 033, 034, 035	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Open

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

BAMP
Suction Line
Pressure
Relief Valves

IW-V1003	2	I	-/Yes	-/-	-/-	-	Open/Closed	-
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Table 2.4.3-2 (1 of 4)

Safety Injection System Component List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Safety Injection Pump	SIP - 01, 02 03, 04	2	I	Yes/No	Yes/Yes	Yes/Yes (SIP #1, 2 only)	ESF-SIAS, DPS-SIAS, Remote Manual	Start	Stop
Safety Injection Tank	SIT - 01, 02 03, 04	2	I	-/-	-	-	-	-	-
IRWST Return Line Check V/V	SI - 100, 101	2	I	-/- ⁽²⁾	-	-	-	Open	-
SI Line Check V/V	SI - 113, 123 133, 143	2	I	-/-	-	-	-	Open	-
SIT Check V/V	SI - 215, 225 235, 245	1	I	-/-	-	-	-	Open	-
SI Line Check V/V	SI - 217, 227 237, 247	1	I	-/-	-	-	-	Open	-
SI Pump Orifice Bypass V/V (Manual)	SI - 218, 219 254, 255	2	I	-/-	-	-	-	-	-
SIT Fill Line Isolation V/V (Manual)	SI - 290	2	I	-/-	-	-	-	Closed	-
SIT Fill Line Isolation V/V (Manual)	SI - 293	2	I	-/-	-	-	-	Closed	-

Open/Closed

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Table 2.4.3-2 (2 of 4)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
SI Combined Miniflow Line Isolation V/V (MOV)	SI - 302, 303	2	I	Yes/No	Yes/Yes	-	Remote Manual	Open	As Is
IRWST Isolation V/V (MOV)	SI - 304, 305 308, 309	2	I	Yes/No	Yes/Yes	Yes/Yes (SI-304/305 only)	Remote Manual	Open	As Is
SI Hot Leg Injection Line Isolation V/V (MOV)	SI - 321, 331	2	I	Yes/No	Yes/Yes	-	Remote Manual	Open	As Is
IRWST Return Line Isolation V/V (MOV)	SI-395	2	I	Yes/Yes	Yes/Yes	-	Remote Manual	Closed	As Is
SI Pump Discharge Check V/V	SI - 404, 405 434, 446	2	I	-/-	-	-	-	Open	
SIT Fill Line Relief V/V	SI - 474	2	I	-/Yes	-	-	-	Open	-
SI Miniflow Check V/V	SI - 424, 426 448, 451	2	I	-/-	-	-	-	Open	-
SI Hot Leg Injection Line Check V/V	SI - 522, 523 532, 533	1	I	-/-	-	-	-	Open	-
SI Line Check V/V	SI - 540, 541 542, 543	1	I	-/-	-	-	-	Open	-

Open/Closed

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Table 2.4.3-2 (3 of 4)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
SI Low Flow Control V/V (MOV)	SI - 602, 603	2	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Open	As Is
SI Hot Leg Isolation V/V (MOV)	SI - 604, 609	2	I	Yes/No	Yes/Yes	-	Remote Manual	Open	As Is
SIT Atmospheric Vent Isolation V/V (SOV)	SI - 605, 606 607, 608 613, 623 633, 643	2	I	Yes/Yes	Yes/Yes	Yes/Yes	Remote Manual	Closed	Closed
SIT Fill & Drain Isolation V/V (AOV)	SI - 611, 621 631, 641	2	I	Yes/Yes	Yes/Yes	-	ESF-SIAS, DPS-SIAS, Remote Manual	Closed	Closed
SIT N ₂ Supply Isolation V/V (AOV)	SI - 612, 619 622, 629 632, 639 642, 649	2	I	No/No	Yes/Yes	-	Remote Manual	Closed	Closed
SIT Discharge Isolation V/V (MOV)	SI - 614, 624 634, 644	1	I	Yes/Yes	Yes/Yes	Yes/Yes	ESF-SIAS, DPS-SIAS, Above Low Pressurizer Pressure (P-103A, 104B) Setpoint Remote Manual	Open	As Is

Open/Closed

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Table 2.4.3-2 (4 of 4)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power <div>Open/Closed</div>
SI Line Isolation V/V (MOV)	SI - 616, 626 636, 646	2	I	Yes/No	Yes/Yes	Yes/Yes (SI-626/646 only)	ESF-SIAS, DPS-SIAS, Remote Manual	Open	As Is
SI Check V/V Leakage Isolation V/V (AOV)	SI - 618, 628 638, 648	1	I	Yes/Yes	Yes/Yes	-	ESF-SIAS, DPS-SIAS, Remote Manual	Closed	Closed
SIT Fill Line Isolation V/V (AOV)	SI - 682	2	I	Yes/No	Yes/Yes	-	ESF-SIAS, DPS-SIAS, Remote Manual	Closed	Closed
SIS Fill Isolation V/V (Manual)	SI - 700, 701 714, 715	2	I	-/-	-	-	-	-	-
SIS Fill Check V/V	SI - 704, 705 706, 707	2	I	-/-	-	-	-	-	-

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

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Table 2.4.4-2 (2 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
CSP Suction Check Valve	SI - 157, 158	2	I	-/No	-/-	-/-	-	Open	-
SCP Suction Check Valve	SI - 159, 160	2	I	-/No	-/-	-/-	-	Open	-
SCP Miniflow Heat Exchanger	SCP MFHX - 01, 02	3 (Shell) /2 (Tube)	I (Shell) /I (Tube)	-/No	-/-	-/-	-	-	-
SCS Line Check Valve	SI - 168, 178	2	I	-/No	-/-	-/-	-	Open	-
SCP Discharge Check Valve	SI - 568, 569	2	I	-/No	-/-	-/-	-	Open	-
SCS Test Return Line Isolation Valve (MOV)	SI - 314, 315 688, 693	2	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Open/Closed	As Is
SCS/CSS Pump Suction Cross Connect Valve (MOV)	SI - 340, 342	2	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Open/Closed	As Is
SCS/CSS Pump Discharge Cross Connect Valve (MOV)	SI - 341, 343	2	I	Yes/No	Yes/Yes	No/No	Remote Manual	Open/Closed	As Is

Open/Closed

Delete

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Table 2.4.4-2 (3 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
SCS Warmup Line Flow Control Valve (MOV)	SI - 690, 691	2	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Open/Closed	As Is
IRWST Return Line Isolation Valve (MOV)	SI - 300, 301	2	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Open /Closed	As Is

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

(3) SCP starts on ESF-SIAS or CSAS only when the SCP is aligned for CSP function.



Delete

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Table 2.4.5-2

Reactor Coolant Gas Vent System Component List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	seismic Category	Class 1E/Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Pressurizer Gas Vent Isolation Valves (SOV)	RG-V410, 411, 412, 413	1	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open/ Closed	Closed
Reactor Vessel Upper Head Gas Vent Isolation Valves (SOV)	RG-V414, 415 416, 417	1	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open/ Closed	Closed
Gas Vent to RDT Valves (SOV)	RG-V418	2	I	No/No	Yes/Yes	Yes/Yes	-	-	Closed
Gas Vent to IRWST Valves (SOV)	RG-V419, 420	2	I	Yes/Yes	Yes/Yes	Yes/Yes	-	Open	Closed
RCGVS Vacuum Breaker Valve	RG-V1421	3	I	No/No	-	-	-	-	-

(1) The column "Item No." is information only (not part of certified design).

-/Yes

Open/Closed

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Table 2.7.1.8-2 (1 of 2)

Steam Generator Blowdown System Component List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Display/Control at MCR	Display/Control at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position	Radwaste Safety Class
Hot Leg Blowdown Valve (MOV)	SD-V001, V002	2	I	No/Yes	Yes/Yes	Yes/Yes	-	-	As-is	-
Cold Leg Blowdown Valve (MOV)	SD-V003, V004	2	I	No/Yes	Yes/Yes	Yes/Yes	-	-	As-is	-
Containment Isolation Valve (AOV)	SD-V005, V006	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS/MSIS/AFAS/DPS-AFAS	Close	Close	-
Containment Isolation Valve (MOV)	SD-V007, V008	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS/MSIS/AFAS/DPS-AFAS	Close	As is	-
Containment Isolation Valve (Gate)	SD-V1113	2	I	-/Yes	No/No	No/No	-	Close	-	-
	SD-V1114	2	I	-/Yes	No/No	No/No	-	Close	-	-
Containment Isolation Valve (Check)	SD-V1115	2	I	-/Yes	No/No	No/No	-	Close	-	-
	SD-V1116	2	I	-/Yes	No/No	No/No	-	Close	-	-
Steam Generator Blowdown Prefilter	SD-FT01, FT02	NSS	II	- /No	No/No	No/No	-	-	-	RW-IIc
Steam Generator Blowdown Postfilter	SD-FT03	NSS	II	- /No	No/No	No/No	-	-	-	RW-IIc

Closed

-/-

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Table 2.7.2.1-2

Essential Service Water System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Display/Control at MCR	Display/Control at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
ESW pumps	SX-PP01A, PP01B, PP02A, PP02B	3	I	Yes/No	Yes/Yes	Yes/Yes	EDG Load Sequence Disch. Press. Low	Start	-
ESW debris filters	SX-FT01A, FT02A, FT03A, FT01B, FT02B, FT03B	3	I	No/No	No/No	No/No	-	-	-
ESW pump discharge line check	SX-1001, 1002, 1003, 1004	3	I	-/-	-/-	-/-	-	Open/Close	-
ESW pump discharge isolation (MOV)	SX-045, 046, 047, 048	3	I	Yes/No	Yes/Yes	Yes/Yes	-	Open	As Is

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

CCW heat exchanger outlet common header vacuum relief	SX-1051,1052	3	I	-/No	-/-	-/-	-	Open/Closed	-
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APR1400 DCD TIER 1

Table 2.7.2.2-2 (1 of 3)

Component Cooling Water System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
CCW heat exchangers	CC-HE01A, HE01B, HE02A, HE02B, HE03A, HE03B	3	I	-/-	-/-	-/-	-	-	-
CCW pumps	CC-PP01A, PP01B, PP02A, PP02B	3	I	Yes/No	Yes/Yes	Yes/Yes	EDG Load Sequence, Disch. Pres. Low	Start	-
CCW makeup pumps	CC-PP03A, PP03B	3	I	Yes/No	Yes/Yes	Yes/Yes	CCWSTLAS ⁽³⁾	Start	-
CCW surge tanks	CC-TK01A, TK01B	3	I	-/-	-/-	-/-	-	-	-
CCW makeup isolation (MOV)	CC-011, 012	3	I	Yes/No	Yes/Yes	Yes/Yes	CCWSTLAS ⁽³⁾	Open	As Is
CCW heat exchangers outlet jogging control (MOV)	CC-021, 022, 023, 024, 025, 026, 031, 032, 033, 034, 035, 036	3	I	Yes/No	Yes/Yes	Yes/Yes	SIAS	Open	As Is
CCW heat exchanger bypass (MOV)	CC-027, 028, 037, 038	3	I	Yes/No	Yes/Yes	Yes/Yes	SIAS	Close	As Is
Containment spray heat exchangers inlet isolation (MOV)	CC-097, 098	3	I	Yes/Yes	Yes/Yes	Yes/Yes	SIAS, CSAS	Open	As Is

Open/Closed

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Table 2.7.2.2-2 (2 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Essential chiller condenser outlet isolation (MOV)	CC-131, 132, 383, 384	3	I	Yes/No	Yes/Yes	Yes/Yes	Chiller pump start/stop	Open Close	As Is
Essential chiller condenser outlet control (MOV)	CC-901, 902, 905, 906	3	I	Yes/No	Yes/Yes	Yes/Yes	Chiller condenser pressure	Modulate	Open
Non-essential header inlet and outlet isolation (MOV)	CC-143, 144, 145, 146, 147, 148, 149, 150	3	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, CCWSTLLAS	Close	As Is
EDG cooler inlet isolation (MOV)	CC-181, 182, 191, 192	3	I	Yes/No	Yes/Yes	Yes/Yes	SIAS, EDG Start	Open	As Is
RCP cooler isolation (MOV)	CC-231, 249, 250	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CCWSTLLAS ⁽⁴⁾	Close	As Is
Letdown heat exchanger inlet and outlet isolation (MOV)	CC-296, 297, 301, 302	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Close	As Is
SC heat exchangers inlet isolation (MOV)	CC-351, 352	3	I	Yes/Yes	Yes/Yes	Yes/Yes	SIAS	Close	As Is
SFP cooling heat exchangers isolation (MOV)	CC-389, 390	3	I	Yes/No	Yes/Yes	Yes/Yes	-	Open	As Is
Cross connection isolation (MOV)	CC-937, 938, 939, 940	3	I	Yes/No	Yes/Yes	Yes/Yes	SIAS	Close	As Is

Open

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Table 2.7.2.2-2 (3 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/ Harsh Envir. Qual.	Control/ Display at MCR	Control/ Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
CCW pump discharge check	CC-1001, 1002, 1003, 1004	3	I	-/No	-/-	-/-	-	Open	-
RCP common line check	CC-1099	2	I	-/Yes	-/-	-/-	-	Open/ Close	-
Containment penetration piping bypass check	CC-1100, 1685, 1686	2	I	-/Yes	-/-	-/-	-	Close	-
CCW surge tank vacuum relief	CC-1107, 1108	3	I	-/-	-/-	-/-	-	-	-
CCW surge tank relief	CC-1111, 1112	3	I	-/-	-/-	-/-	-	-	-
CCW makeup pump discharge check	CC-1303, 1304, 1309, 1310	3	I	-/No	-/-	-/-	-	Open	-
CCW makeup pump bypass check	CC-1325, 1326	3	I	-/No	-/-	-/-	-	Close	-
Demineralized water makeup line check	CC-1317, 1318, 1319, 1320	3	I	-/No	-/-	-/-	-	Close	-
Nitrogen supply line check	CC-1109, 1110	3	I	-/No	-/-	-/-	-	Close	-

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

(3) CCWSTLAS: CCW surge tank low water level actuation signal

(4) CCWSTLLAS: CCW surge tank low-low water level actuation signal

CCW pump recirculate check	CC-1131, 1132, 1133, 1134	3	I	-/No	-/-	-/-	-/-	Open/Closed	-
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Table 2.7.2.6-2 (1 of 3)

Process and Post-Accident Sampling System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Control / Display at MCR	Control / Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
RCS Hot Leg Sample Line CIV inside Containment (SOV)	PX-001	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
RCS Hot Leg Sample Line CIV outside Containment (SOV)	PX-002	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
RCS PZR Surge Sample Line CIV inside Containment (SOV)	PX-003	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
RCS PZR Surge Sample Line CIV outside Containment (SOV)	PX-004	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
RCS PZR Steam Space Sample Line CIV inside Containment (SOV)	PX-005	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
RCS PZR Steam Space Sample Line CIV outside Containment (SOV)	PX-006	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
SI Pumps Miniflow Sample Line Isolation Valve (SOV)	PX-008	2	I	No/No	No/No	No/No	-	-	Closed
SI Pumps Miniflow Sample Line Isolation Valve (SOV)	PX-009	2	I	No/No	No/No	No/No	-	-	Closed

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Table 2.7.2.6-2 (2 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Control / Display at MCR	Control / Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
CVCS Purification Filter Inlet Sample Valves (SOV)	PX-012, 013, 014	3	I	No/No	No/No	No/No	-	-	Closed
SC Pump Miniflow Sample Line Isolation Valves (SOV)	PX-016, 017	2	I	No/No	No/No	No/No	-	-	Closed
SI Tank Sample Line CIV outside Containment (SOV)	PX-020	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
SI Tank Sample Line CIV inside Containment (SOV)	PX-021	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
SI Tank Sample Line Isolation Valves (SOV)	PX-022, 023, 024, 025	2	I	No/No	No/No	No/No	-	-	Closed
CS Pump Miniflow Sample Line Isolation Valves (SOV)	PX-026, 027	2	I	No/No	No/No	No/No	-	-	Closed
Sample Return Line Isolation Valves (SOV)	PX-034	3	I	No/No	No/No	No/No	-	-	Closed
Containment Air Sample Line CIV inside Containment(MOV)	PX-041	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	As Is
Containment Air Sample Line CIV outside Containment (MOV)	PX-042	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	As Is
Containment Air Sample Return Line CIV outside Containment (MOV)	PX-043	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	As Is

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Table 2.7.2.6-2 (3 of 3)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Control / Display at MCR	Control / Display at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
PASS Sample Return Line CIV outside Containment (SOV)	PX-053	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CIAS	Closed	Closed
VCT Gas Sample Line Isolation Valves (SOV)	PX-063	3	I	No/No	No/No	No/No	-	-	Closed
PASS Sample Return Line CIV inside Containment	PX-1005	2	I	-/Yes	-	-	-	Closed	-/-
Containment Air Sample Return Line CIV inside Containment	PX-1020	2	I	-/Yes	-	-	-	Closed	-/-

Open/Closed

- (1) The column "Item No." is information only (not part of certified design).
 (2) Dash(-) indicates not applicable.

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Table 2.7.4.3-2

Spent Fuel Pool Cooling and Cleanup System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Display/Control at MCR	Display/Control at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
SFP Cooling Pump A, B	FC-PP01A, PP01B	3	I	Yes/No	Yes/Yes	Yes/Yes	Remote Manual	Start	-
							SFP Level Lo-Lo	stop	
SFP Cooling Heat Exchanger	FC-HE02A, HE02B	3	I	-	-	-	-	-	-
SFP Cooling Pump Discharge Line Check Valve	FC-1005, 1006	3	I	-	-	-	-	Transfer Open/ Transfer Close	-
Containment Isolation Valve	FC-1142, 1143, 1144 (Manual), 1145 (Check V/V)	2	I	-	-	-	-	Close	-
SFP External Makeup and Spray Line Check Valve	FC-2601, 2605, 2611, 2615	-	I	-	-	-	-	-	-

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

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Table 2.11.2-2 (1 of 2)

Containment Spray System Components List

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Display/Control at MCR	Display/Control at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
Containment Spray Pump 1, 2	CS - PP01A, PP01B	2	I	Yes/Yes	Yes/Yes	Yes/Yes	SIAS/CSAS	Running	-
Containment Spray Heat Exchanger	CS - HE01A, HE01B	2	I	-	-	-	-	-	-
Containment Spray Miniflow Heat Exchanger	CS - HE02A, HE02B	2	I	-	-/-	-/-	-	-	-
Containment Spray Nozzles	-	2	I	-	-/-	-/-	-	-	-
Containment Spray Header Block Valve (MOV)	CS -V001, V002	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Transfer Closed/ Transfer Open	As-Is
Containment Spray Header Isolation Valve (MOV)	CS -V003, V004	2	I	Yes/Yes	Yes/Yes	Yes/Yes	CSAS	Transfer Open/ Transfer Closed	As-Is
Containment Spray Header Check Valve	CS -V1007, V1008	2	I	-	-/-	-/-	-	Transfer Open/ Transfer Closed	-
CSP Discharge Check Valve	CS - V1001, V1002	2	I	-	-/-	-/-	-	Transfer Open	-

Open

Open/
Closed

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Table 2.11.2-2 (2 of 2)

Component Name	Item No. ⁽¹⁾	ASME Section III Class	Seismic Category	Class 1E/Harsh Envir. Qual.	Display/Control at MCR	Display/Control at RSR	Control Signal	Active Safety Function	Loss of Motive Power Position
CS IRWST Return Line Flow Control Valve (MOV)	CS - V005, V006	2	I	Yes/Yes	Yes/Yes	Yes/Yes	No	Transfer Open/ Transfer Closed	As-Is
CS IRWST Return Line Isolation Valve (MOV)	CS - V007, V008	2	I	Yes/Yes	Yes/Yes	Yes Yes	-	Transfer Open/ Transfer Closed	As-Is
ECSBS Spray Header Isolation Valve (Manual)	CS - V1013	2	I	-/-	-/-	-/-	-	-	-
ECSBS Spray Header Check Valve	CS -V1014	2	I	-/Yes	-/-	-/-	-	Transfer Closed	-

(1) The column "Item No." is information only (not part of certified design).

(2) Dash(-) indicates not applicable.

CS Heat
Exchanger
Relief Valve

CS-V1005 V1006	2	I	-/Yes	-/-	-/-	-	Open/Closed	-
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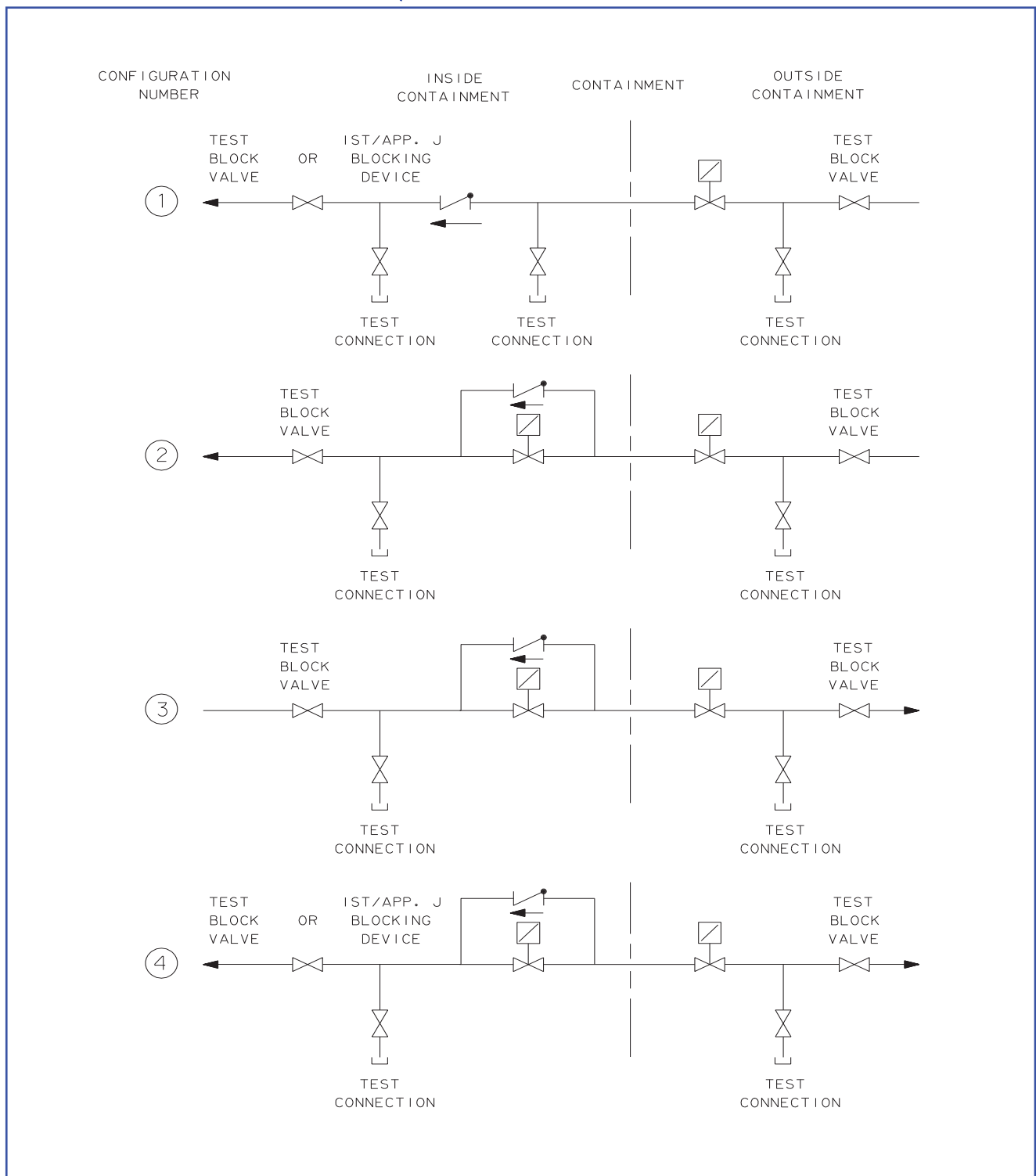
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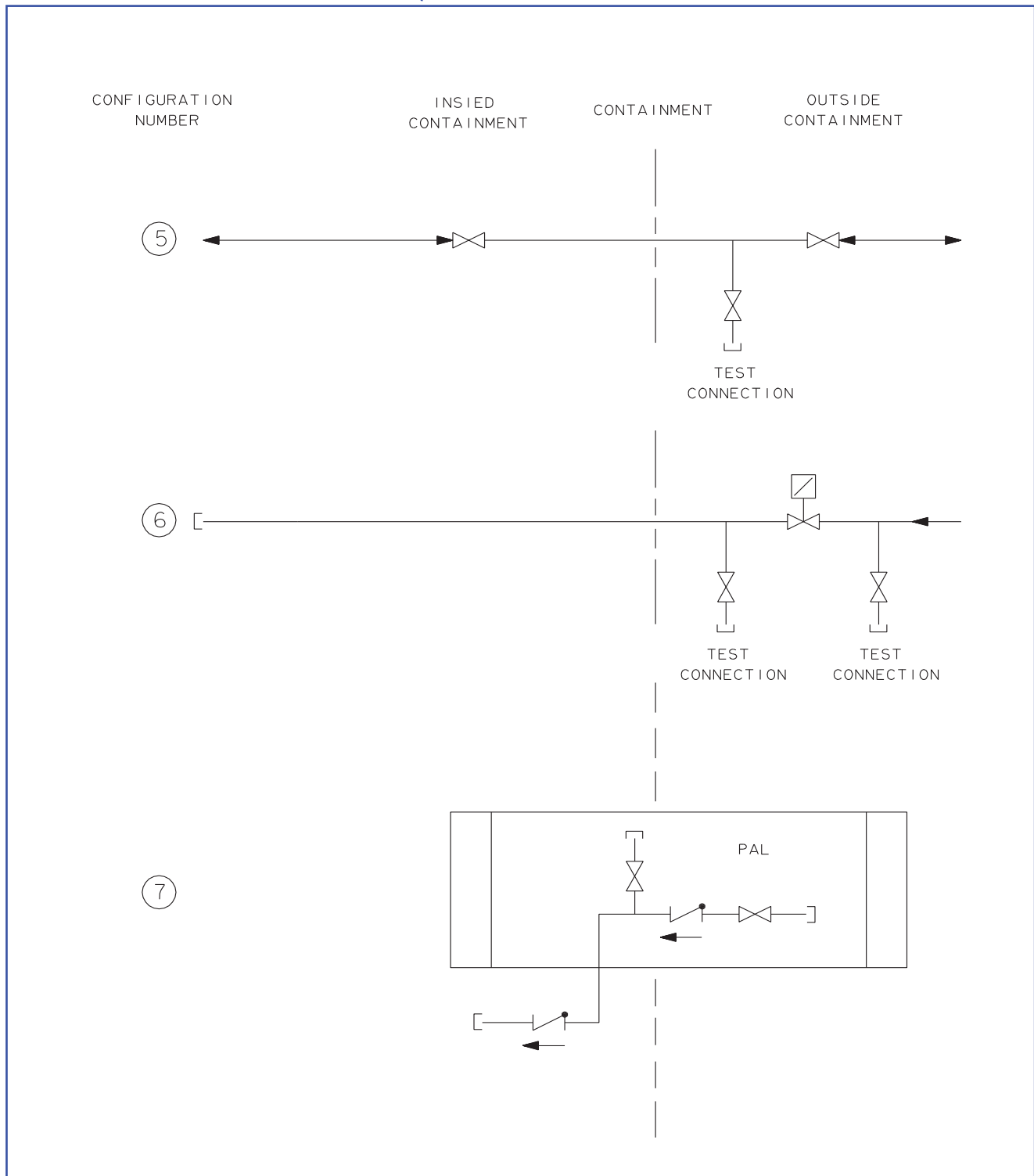
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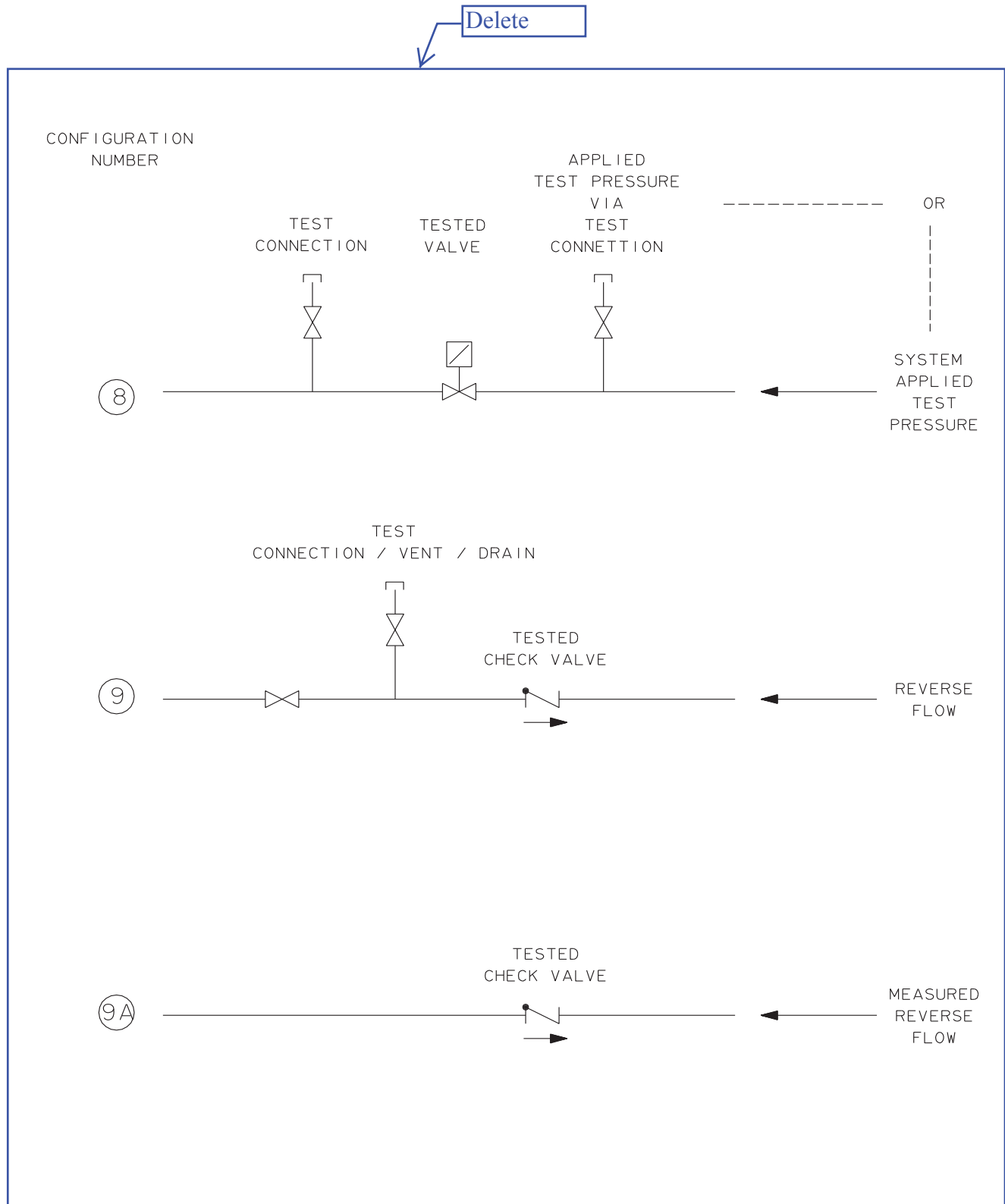
Figure 3.9-15 ~~Typical Inservice Testing Connections (1 of 9)~~

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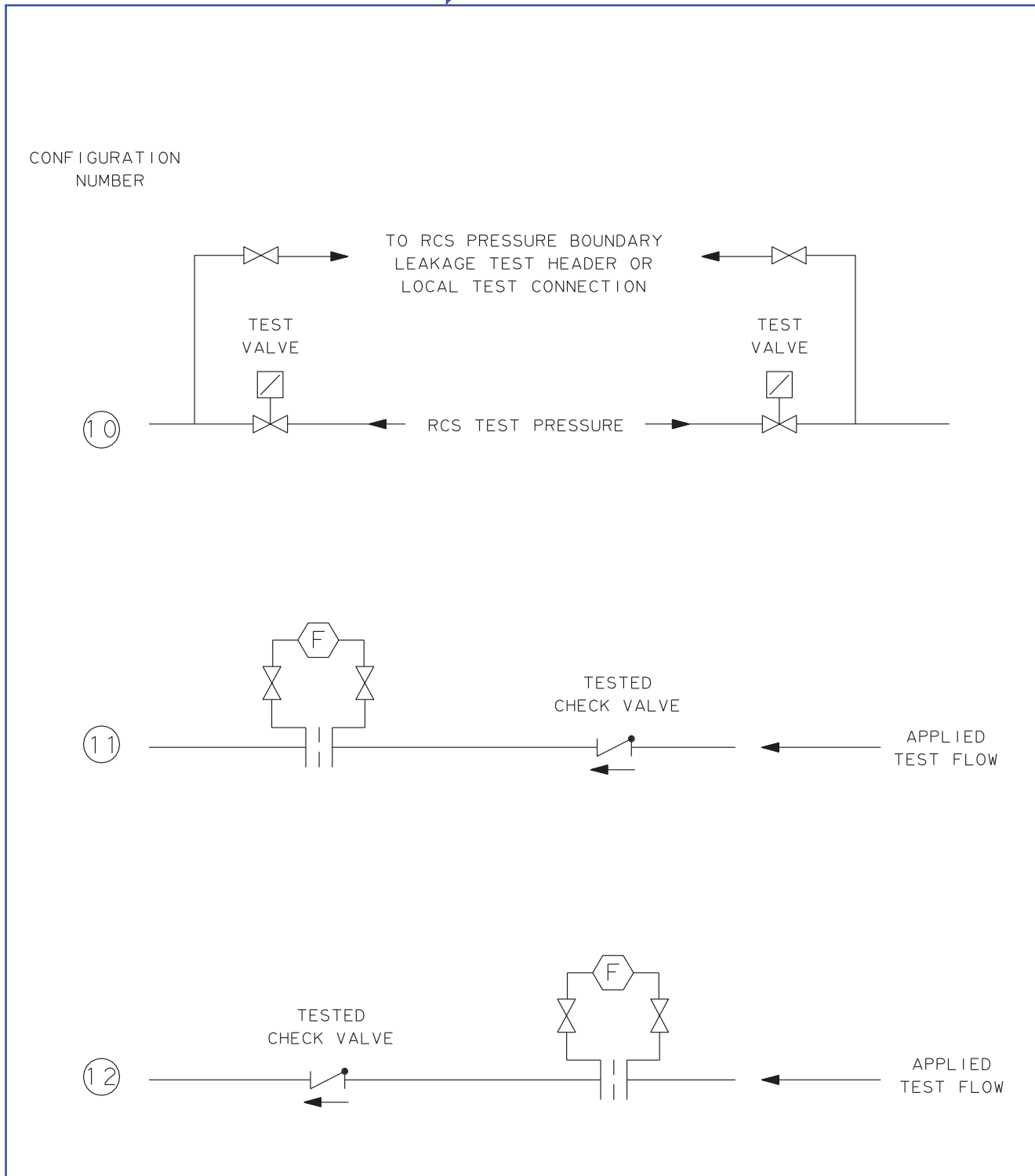
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Figure 3.9-15 ~~Typical Inservice Testing Connections (2 of 9)~~

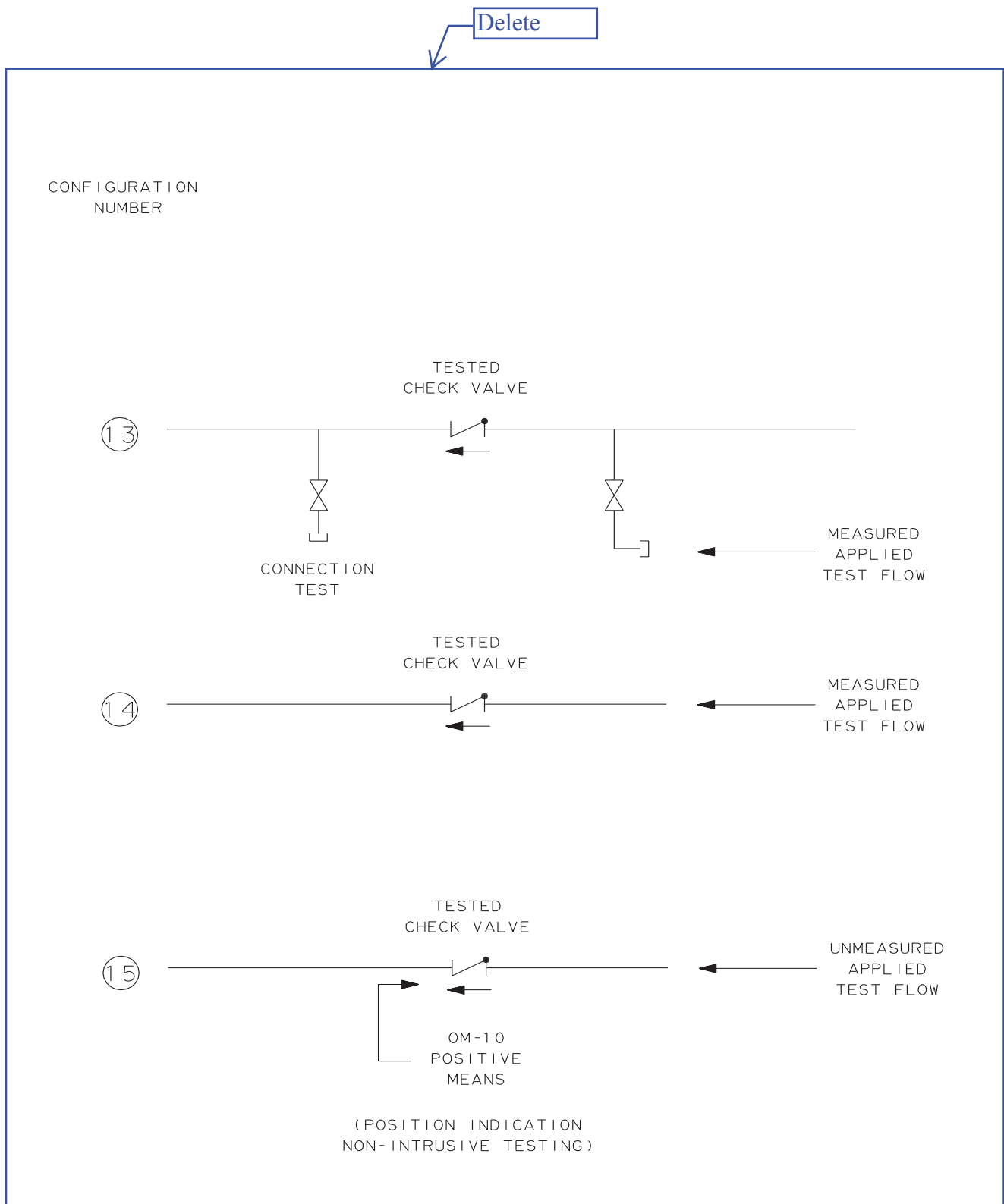
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Figure 3.9-15 ~~Typical Inservice Testing Connections (3 of 9)~~

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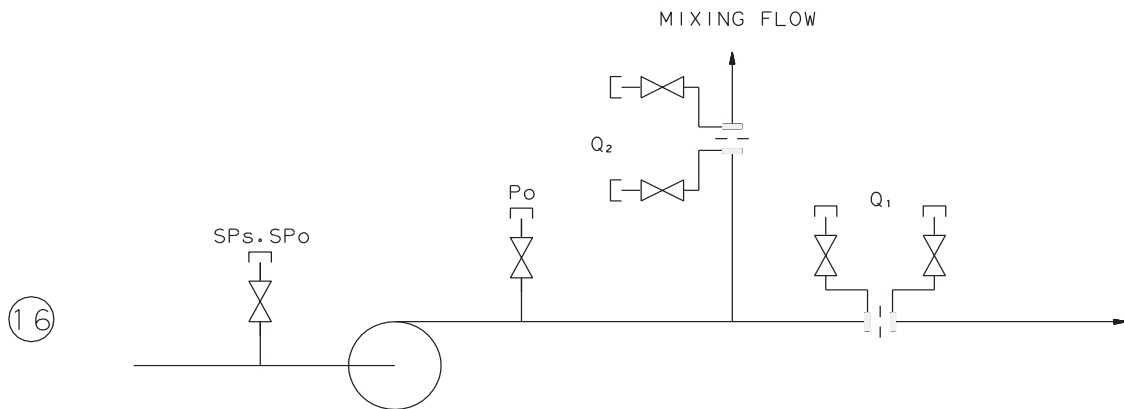
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Figure 3.9-15 ~~Typical Inservice Testing Connections (5 of 9)~~

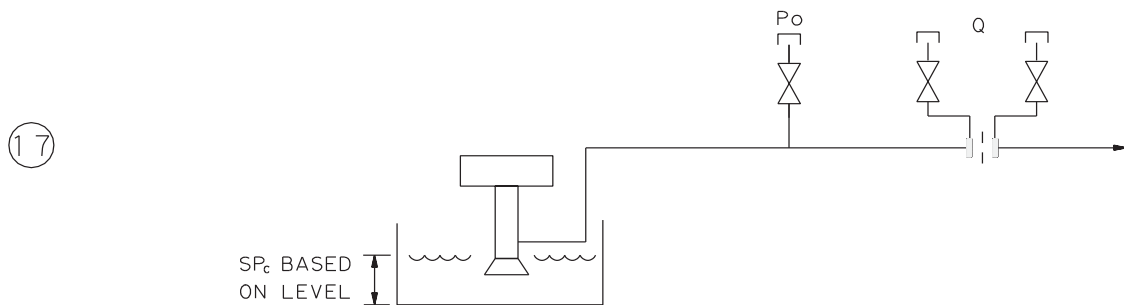
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CCW PUMP TESTING CONFIGURATION



VERTICAL WET PIT PUMP TESTING CONFIGURATION

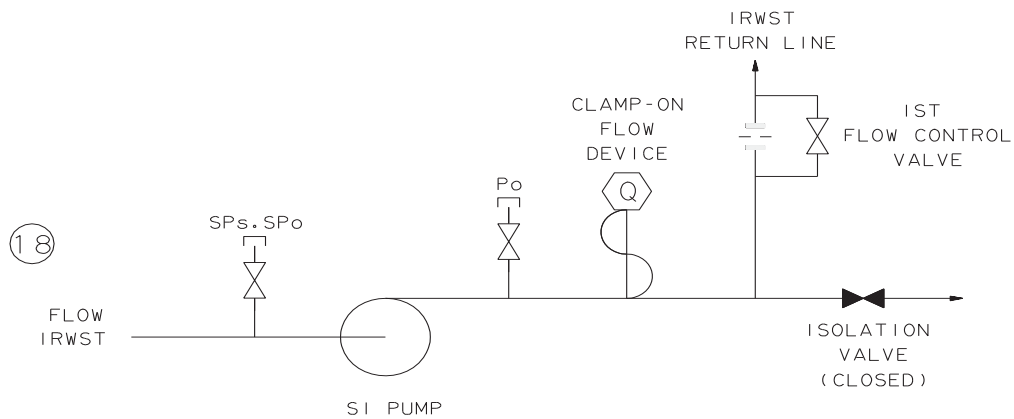
Figure 3.9-15 ~~Typical Inservice Testing Connections (6 of 9)~~

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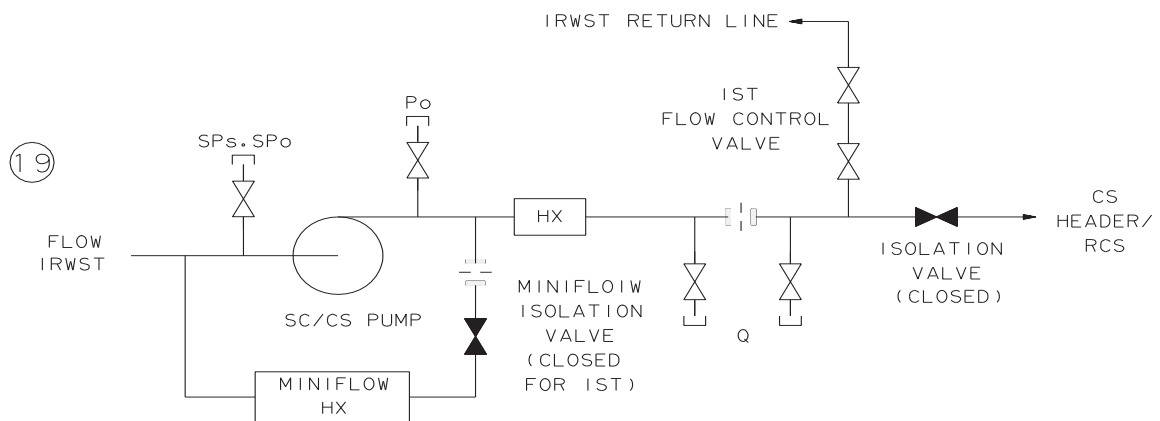
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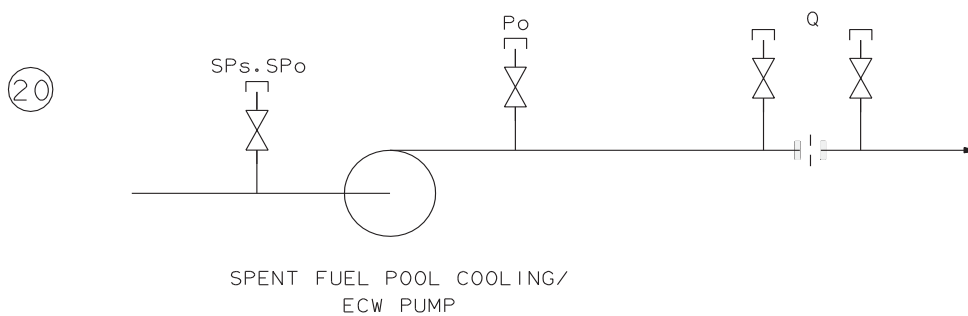
Figure 3.9-15 ~~Typical Inservice Testing Connections (7 of 9)~~

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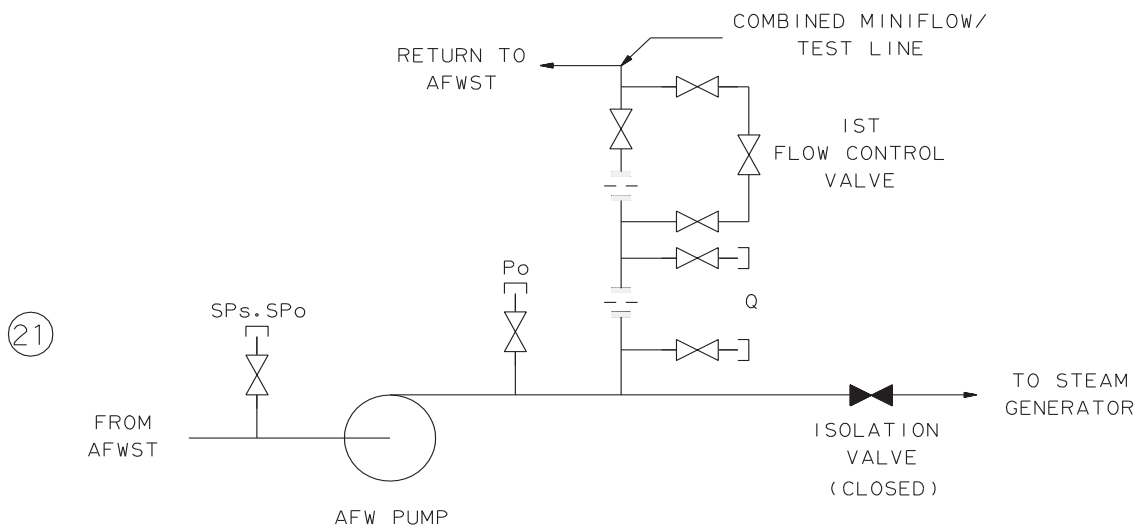
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CONFIGURATION
NUMBER

SPENT FUEL POOL COOLING/ECW PUMP TESTING CONFIGURATION



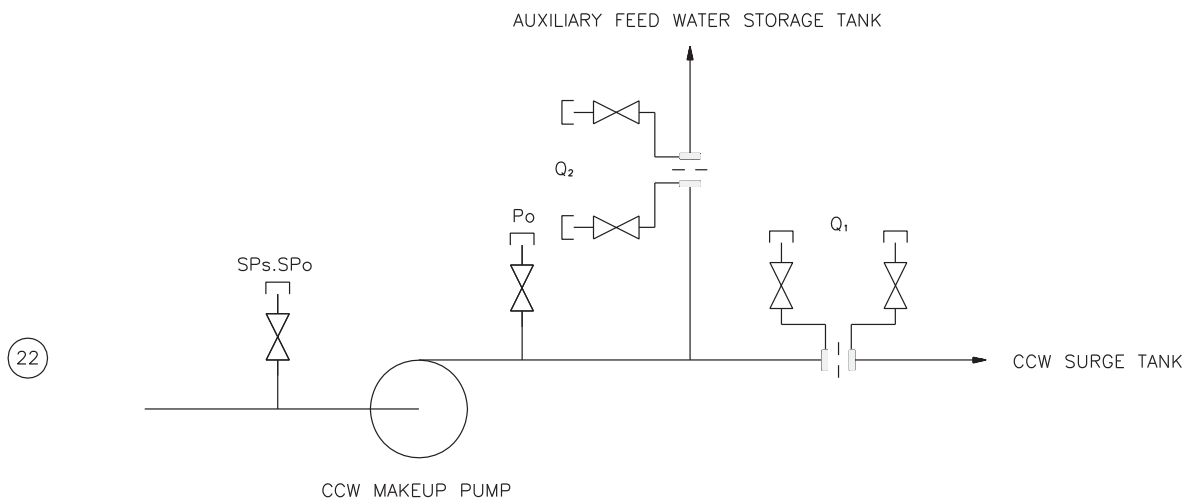
AFW PUMP TESTING CONFIGURATION

Figure 3.9-15 ~~Typical Inservice Testing Connections (8 of 9)~~

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CCW MAKE-UP PUMP TESTING CONFIGURATION

Figure 3.9-15 ~~Typical Inservice Testing Connections (9 of 9)~~