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Message:
1. July 22 deferred response to ltr to P.W. Marriott from C. Posusny dated May 4, 1992 - ABWR IST Review
2. Update of SAAR subsection 3.9.6 - IST (Code reference)
3. Update of SAAR Table 3.9-8 - IST (Supercedes FAX of 7/10/92)

D050

ABWR PUMP AND VALVE IST PROGRAM

PUMPS

General

5. Although Section 3.9.6 of the SSAR states that no relief requests will be added for the pump IST program, Table 3.9-8 indicates that exceptions to the ASME code are identified such as SLCS pump test frequency and the exclusion of important pumps from the IST program. Therefore, identify all pumps in the ABWR IST program which can not be tested in accordance with the ASME Code Part 6.

Response:
The Table 3.9-8 update of July 22 includes pump test exemption requests and justification as noted by (i) in the pump description.

PUMPS

Specific

2. Provide the technical justification for selecting a two year test frequency for measuring Standby Liquid Control System pump flow rate. In accordance with the ASME Code Part 6, all safety related pumps which are not in regular use should be tested every three months.

Response:
The SLCS pump flow will be tested every three months via the test loop as indicated on Table 3.9-8 update of July 22.

3. In light of the requirements set forth in Table 2 of ASME Part 6, explain why the Standby Liquid Control, Residual Heat Removal, and High Pressure Core Flooder Pumps do not include Vd (peak-to-peak vibration displacement) as one of their IST test parameters in Table 3.9-8 while the Reactor Core Isolation Cooling pump does include Vd.

Response:
The SLC pumps include the vibration displacement Vd test parameter as indicated on Table 3.9-8 update of July 22 due to their low operating speed.

VALVES

General

2. Section 4.2.1 of OM-10 of the ASME code provides considerable flexibility in selecting the valves exercising frequency. This flexibility allows for a stepped relaxation of the three month frequency to part stroke exercising, cold shutdown, and/or refueling outage frequencies. This relaxation in exercise frequency, however, is based on whether the more frequent time period is not practicable. For those valves in the IST program which are taking advantage of this flexibility to relax the exercise test procedure frequency, provide a technical justification as to why the more restrictive frequency is not practicable.

Response:
The Table 3.9-8 update of July 22 contains the valve exercising note (h) "Reason for code defined exceptions (Paragraphs ISTC 4.2.2, 4.5.2)" as indicated in each applicable valve description.

3. Does the ABWR system and valve design provide for both the forward and reverse flow testing of all check valves in the IST program? Provide a technical discussion as to how the ABWR design accommodates this test goal.

Response:
The ABWR test goal is as stated in the code Paragraph ISTC 4.5.2(a) "During plant operation, each check valve shall be exercised or examined in a manner that verifies obturator travel to the closed, full-open, or partially open position required to fulfill its function." Full-open or partially open is verified by flow test and close is verified by Part 50 Appendix J leakage test or the use of a test tap. In addition testable check valves are being used to avoid disassembly as an alternative to verify valve operability.

VALVES
Specific

REACTOR SERVICE WATER SYSTEM

7. Check valves F007 and F008 are in series on the same pipeline with no intermediate pipe tap to allow for testing each valve individually. Explain how check valve F007 can be tested in accordance with the ABWR IST program since its operation can not be distinguished from that of valve F008.

Response:
F007 and F008 will be stroke tested at intervals not exceeding 3 months by the addition of test connections to the P&ID allowing individual valve testing.

REACTOR SERVICE WATER SYSTEM (Continued)

8. From Figure 9.2-7, MOVs F006 and F013 are controlled by a single remote manual switch and solenoid valves F009 and F011 are controlled by a single remote manual switch. Explain how valves F006 and F011 can be individually tested in accordance with the ABWR IST program when their operation will also cause the operation of another valve.

Response:
These valves, operating from the same switch, can be tested together while maintaining individual test results.

INSTRUMENT AIR SYSTEM

3. Explain how check valve F277 which is located inside the containment will be tested for closure with the introduction of backflow in its connected piping.

Response:
A test connection has been added to the P&ID.

REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

8. Check valves F022 and F023 are in series on the same pipeline with no pipe tap in between them. Explain how the required IST program tests can be performed so that <u>each</u> of these valves can be tested individually.

Response:
F022 and F023 will be stroke tested at intervals of 3 months by the addition of test connections to the P&ID allowing individual valve testing.

3.9.5.3.6 Stress, Deformation, and Fatigue Limits for Safety Class and Other Reactor Internals (Except Core Support Structures)

For safety class reactor internals, the stress deformation and fatigue criteria listed in Tables 3.9-4 through 3.9-7 are based on the criteria established in applicable codes and standards for similar equipment, by manufacturers standards, or by empirical methods based on field experience and testing. For the quantity SF_{min} (minimum safety factor) appearing in those tables, the following values are used:

Service Level	Service Condition	SF_{min}
A	Normal	2.25
B	Upset	2.25
C	Emergency	1.5
D	Faulted	1.125

Components inside the reactor pressure vessel such as control rods which must move during accident condition have been examined to determine if adequate clearances exist during emergency and faulted conditions. No mechanical clearance problems have been identified. The forcing functions applicable to the reactor internals are discussed in Subsection 3.9.2.5.

The design criteria, loading conditions, and analyses that provide the basis for the design of the safety class reactor internals other than the core support structures meet the guidelines of NG-3000 and are constructed so as not to adversely affect the integrity of the core support structures (NG-1122).

The design requirements for equipment classified as non-safety (other) class internals (e.g., steam dryers and shroud heads) are specified with appropriate consideration of the intended service of the equipment and expected plant and environmental conditions under which it will operate. Where Code design requirements are not applicable, accepted industry or engineering practices are used.

3.9.6 Inservice Testing of Pumps and Valves

Inservice testing of safety-related pumps and valves will be performed in accordance with the requirements of ASME OM Code 1990, Subsection ISTB, ISTC and Appendix I. Table 3.9-8 lists the inservice testing parameters and frequencies for the safety-related pumps and valves. The reason for each code defined testing exception or justification for each code exemption request is noted in the description of the affected pump or valve. Valves having a containment isolation function are also noted in the listing. Inservice inspection is discussed in Subsection 5.2.4 and 6.6. 210.47

Details of the inservice testing program, including test schedules and frequencies will be reported in the inservice inspection and testing plan which will be provided by the applicant referencing the ABWR design. The plan will integrate the applicable test requirements for safety-related pumps and valves including those listed in the technical specifications (Chapter 16) and the containment isolation system, (Subsection 6.2.4). For example, the periodic leak testing of the reactor coolant pressure isolation valves in Table 3.9-9 will be performed in accordance with Chapter 16 Surveillance Requirement SR 3.6.1.5.10. This plan will include baseline pre-service testing to support the periodic in-service testing of the components. Depending on the test results, the plan will provide a commitment to disassemble and inspect the safety related pumps and valves when limits of the OM Code are exceeded, as described in the following paragraphs. The primary elements of this plan, including the requirements of Generic Letter 89-10 for motor operated valves, are delineated in the subsections to follow. (See Subsection 3.9.7.3 for COL license information requirements). 210.49 210.50

3.9.6.1 Inservice Testing of Safety-Related Pumps

The ABWR safety related pumps and piping configurations accommodate inservice testing at a flow rate at least as large as the maximum design flow for the pump. In addition, the 210.5

sizing of each minimum recirculation flow path is evaluated to assure that its use under all analyzed conditions will not result in degradation of the pump. The flow rate through minimum recirculation flow paths can also be periodically measured to verify that flow is in accordance with the design specification.

The safety-related pumps are provided with instrumentation to verify that the net positive suction head (NPSH) is greater than or equal to the NPSH required during all modes of pump operation. These pumps can be disassembled for evaluation when Subsection ISTB testing results in a deviation which falls within the "required action range." The Code provides criteria limits for the test parameters identified in Table 3.9-8. A program will be developed by the applicant referencing the ABWR design to establish 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. The program may be revised throughout the plant life to minimize disassembly based on past disassembly experience. (See Subsection 3.9.7.2(1) for COL license information requirements.)

3.9.6.2 Inservice Testing of Safety-Related Valves

3.9.6.2.1 Check Valves

All ABWR safety-related piping systems incorporate provisions for testing to demonstrate the operability of the check valves under design conditions. In-service testing will incorporate the use of advance non-intrusive techniques to periodically assess degradation and the performance characteristics of the check valves. The Subsection ISTC tests will be performed, and check valves that fail to exhibit the required performance can be disassembled for evaluation. The Code provides criteria limits for the test parameters identified in Table 3.9-8. A program will be developed by the applicant referencing the ABWR design to establish 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. The program may be revised throughout the plant life to minimize disassembly based on past disassembly experience. (See Subsection 3.9.7.3(1) for COL license information requirements.)

3.9.6.2.2 Motor Operated Valves

The motor operated valve (MOV) equipment specifications require the incorporation of the results of either in-situ or prototype testing with full flow and pressure or full differential pressure to verify the proper sizing and correct switch settings of the valves. Guidelines to justify prototype testing are contained in Generic Letter 89-10, Supplement 1, Questions 22 and 24 through 28. The applicant referencing the ABWR design will provide a study to determine the optimal frequency for valve stroking during in-service testing such that unnecessary testing and damage is not done to the valve as a result of the testing. (See Subsection 3.9.7.3 for COL license information requirements).

The concerns and issues identified in Generic Letter 89-10 for MOVs will be addressed prior to plant startup. The method of assessing the loads, the method of sizing the actuators, and the setting of the torque and limit switches will be specifically addressed. (See Subsection 3.9.7.3 for COL license information requirements).

The in-service testing of MOVs will rely on diagnostic techniques that are consistent with the state of the art and which will permit an assessment of the performance of the valve under actual loading. Periodic testing per Subsection ISTC will be conducted under adequate differential pressure and flow conditions that allow a justifiable demonstration of continuing MOV capability for design basis conditions, including recovery from inadvertent valve positioning. MOVs that fail the acceptance criteria, and are "declared inoperable," for stroke tests and leakage rate can be disassembled for evaluation. The Code provides criteria limits for the test parameters identified in Table 3.9-8. A program will be developed by the applicant referencing the ABWR design to establish the frequency and the extent of disassembly and inspection based on suspected degradation of all safety related "MOV's", including the basis for the frequency and the extent of each disassembly. The program may be revised throughout the plant life to minimize

disassembly based on past disassembly experience. (See Subsection 3.9.7.3(1) for COL license information requirements.)

3.9.6.2.3 Isolation Valve Leak Tests

The leak-tight integrity will be verified for each valve relied upon to provide a leak-tight function. These valves include:

(1) pressure isolation valves - valves that provide isolation of pressure differential from one part of a system from another or between systems;

(2) temperature isolation valves - valves whose leakage may cause unacceptable thermal loading on supports or stratification in the piping and thermal loading on supports or whose leakage may cause steam binding of pumps; and

(3) containment isolation valves - valves that perform a containment isolation function in accordance with the Evaluation Against Criterion 54, Subsection 3.1.2.5.5.2, including valves that may be exempted from Appendix J, Type C testing but whose leakage may cause loss of suppression pool water inventory.

Leakage rate testing of valves will be in accordance with the Subsection ISTC, Paragraph ISTC 4.3.2 and 4.3.3. An example is the fusible plug valves that provide a lower drywell flood for severe accidents described in Subsection 9.5.12. The valves are safety-related due to the function of retaining suppression pool water as shown in Figure 9.5-3. These special valves are noted here and not in Table 3.9-8. The fusible plug valve is a nonreclosing pressure relief device and the Code requires replacement of each at a maximum of 5 year intervals.

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

System Pumps

No.	Qty	Description (h)(l)	Safety Class (a)	Test Param (b)	Test Freq. (f)	SSAR Fig. (g)
C41-C001	2	Standby Liquid Control System pump (i1)	2	Pd,Vd,Q	3 mo	9.3-1
E11-C001	3	Residual Heat Removal System Pump	2	Pd,Pi Q,Vv	3 mo	5.4-10(3,4,6)
E11-C002	3	Residual Heat Removal System fill pump (i2)	2	Pd,Pi,Vv	E10	5.4-10(3,4,6)
E22-C001	2	High Pressure Core Flooder pump	2	Pd,Pi Q,Vv	3 mo	6.3-7(2)
E51-C001	1	Reactor Core Isolation Cooling pump	2	Pd,Pi,Q, Vv	3 mo	5.4-8(1)
P21-C001	6	Reactor Building Cooling Water pump	3	Pd,Pi,Q Vv	E10	9.2-1(1,4,7)
P25-C001	4	HVAC Emergency Cooling Water Sys pump	3	Pd,Pi,Q Vv	E10	9.2-3(1,2,3)
P41-C001	6	Reactor Service Water System pump	3	Pd,Pi,Q Vv	E10	9.2-7(1,2,3)
Y52-C001	6	Standby D/G Fuel Oil Transfer Pump	3	Pd,Pi Q,Vv	3 mo	9.5-6

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

B21 Nuclear Boiler System Valves

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq (f)	SSAR Fig. (g)
F001	2	Feedwater line Motor-Operated Valve (MOV)	2	B	P		E1	5.1-3(4)
F002	2	Upstream (First) FW line check valve (h3)	2	C	A	S	RO	5.1-3(4)
F003	2	FW line outboard check valve-Air-Operated (AO)(h1)	1	A,C	I,A	L,P,S	RO	5.1-3(4)
F004	2	FW line inboard check valve (h1)	1	A,C	I,A	L,S	RO	5.1-3(4)
F005	2	FW line inboard maintenance valve	1	B	P		E1	5.1-3(4)
F006	2	RWCU (or CUW) System injection line check valve (h3)	2	C	A	S	RO	5.1-3(4)
F007	2	RWCU (or CUW) System injection line MOV	2	B	P	S	E1	5.1-3(4)
F008	4	Inboard Main Steam Iso. Vlv. (MSIV)	1	A	I,A	L,P S	RO 3 mo	5.1-3(3)
F009	4	Outboard Main Steam Iso. Vlv (MSIV)	1	A	I,A	L,P S	RO 3 mo	5.1-3(3)
F010	18	Safety/Relief Valve (SRV)(h2)	1	A,C	A	R S	5 yrs RO	5.1-3(2)
F011	1	MSL bypass/drain line inb. iso. vlv	1	A	I,A	L,P S	RO 3 mo	5.1-3(3)
F012	1	MSL bypass/drain line outb. iso. vlv	1	A	I,A	L,P S	RO 3 mo	5.1-3(3)
F013	1	MSL warm-up line valve	2	B	P		E1	5.1-3(3)
F016	1	MSL downstream drain line header valve	2	B	P		E1	5.1-3(3)
F017	1	MSL downstream drain line header bypass	2	B	A	P S	RO 3 mo	5.1-3(3)
F018	1	RPV non-condensible gas removal line	1	B	P		E1	5.1-3(2)
F019	1	RPV head vent inboard shutoff valve (h1)	1	A	P	L,P,S	RO	5.1-3(2)
F020	1	RPV head vent outboard shutoff valve (h1)	1	A	P	L,P,S	RO	5.1-3(2)
F021	18	SRV discharge line vacuum breaker (h1)	3	C	A	S	RO	5.1-3(2)
F022	18	SRV discharge line vacuum breaker (h1)	3	C	A	S	RO	5.1-3(2)
F024	4	Inboard MSIV nitrogen supply line check valve (h1)	3	C	A	L,S	RO	5.1-3(3)
F025	4	Outboard MSIV air supply line check vlv (h1)	3	C	A	L,S	RO	5.1-3(3)
F026	8	SRV ADS pneumatic supply line chk vlv (h1)	3	C	A	L,S	RO	5.1-3(2)
F029	18	SRV pneumatic supply check valve (h1)	3	C	A	L,S	RO	5.1-3(2)
F031	2	Inboard valve on the outb. FW line check valve test line	2	B	P		E1	5.1-3(4)
F033	4	Inboard shutoff valve on the outboard MSIV test line	2	B	P		E1	5.1-3(3)
F035	1	Inboard test line valve for the MSL bypass/drain valve	2	B	P		E1	5.1-3(3)
F039	2	Inboard test line valve for the inboard FW line check valve	2	B	P		E1	5.3-3(3)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

B21 Nuclear Boiler System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq (f)	SSAR Fig. (g)
F040	2	Outboard test line valve for the FW line check valve	2	B	P		E1	5.1-3(4)
F500	2	Inboard drain line test valve for the first FW line check valve	2	B	P		E1	5.1-3(4)
F503	2	Outboard drain line valve for the FW line check valve	2	B	P		E1	5.1-3(4)
F508	4	Inboard MSIV accumulator A001 vent line vlv	3	B	P		E1	5.1-3(3)
F509	4	Outboard MSIV accumulator A002 vent line vent	3	B	P		E1	5.1-3(3)
F510	8	SRV ADS accumulator A003 vent line valve	3	B	P		E1	5.1-3(2)
F511	18	SRV accumulator A004 vent line valve	3	B	P		E1	5.1-3(2)
F700	4	Manual isolation valve - RPV reference leg water level instrument reference leg line	2	B	P		E1	5.1-3(5,6)
F701	4	Excess flow check valve - RPV reference leg water level instrument reference leg line (h3)	2	A,C	I,A	L,S	RO	5.1-3(5,6)
F702	4	Manual isolation valve - RPV narrow range water level instrument sensing line	2	B	P		E1	5.1-3(5,6)
F703	4	Excess flow check valve - RPV narrow range water level instrument sensing line (h3)	2	A,C	I,A	L,S	RO	5.1-3(5,6)
F704	4	Manual isolation valve - RPV wide range water level instrument sensing line	2	B	P		E1	5.1-3(5,6)
F705	4	Excess flow check valve - RPV wide range water level instrument sensing line (h3)	2	A,C	I,A	L,S	RO	5.1-3(5,6)
F706	1	Root valve - Reactor well water level instrument sensing line	2	B	P		E1	5.1-3(5)
F709	1	Manual isolation valve - RPV shutdown range water level instrument reference leg line	2	B	P		E1	5.1-3(2)
F710	1	Excess flow check valve-RPV shutdown range water level instrument reference leg line (h3)	2	A,C	I,A	L,S	RO	5.1-3(2)
F711	1	Manual isolation valve - RPV head seal leakage instrument line	2	B	P		E1	5.1-3(8)
F712	1	Excess flow check valve to RPV head seal leakage instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(8)
F713	4	Manual isolation valve - RPV above pump deck instrument line	2	B	P		E1	5.1-3(7)
F714	4	Excess flow check valve - RPV above pump deck instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(7)
F715	4	Manual isolation valve - RPV below pump deck instrument line	2	B	P		E1	5.1-3(7)
F716	4	Excess flow check valve - RPV below pump deck instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(7)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

B21 Nuclear Boiler System Valves (Continued)

No.	Qty	Description(h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F717	4	Manual isolation valve - RPV above core plate instrument line	2	B	P		E1	5.1-3(7)
F718	4	Excess flow check valve - RPV above core plate instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(7)
F719	4	Manual isolation valve - RPV below core plate instrument line	2	B	P		E1	5.1-3(7)
F720	4	Excess flow check valve - RPV below core plate instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(7)
F723	4	Manual isolation valve - MSL flow restrictor instrument line	2	B	P		E1	5.1-3(2)
F724	4	Excess flow check valve - MSL flow restrictor instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(2)
F725	4	Manual isolation valve - MSL flow restrictor instrument line	2	B	P		E1	5.1-3(2)
F726	4	Excess flow check valve - MSL flow restrictor instrument line (h3)	2	A,C	I,A	L,S	RO	5.1-3(2)
F727	2	MSL PX instrument line inboard root valve	2	B	P		E1	5.1-3(3)

B31 Reactor Recirculation Internal Pump Valves

F008	10	RIP pump motor purge water line outboard isolation check valve (i3)	2	A,C	I,A	L,S	RO	5.4-4(2)
F009	10	RIP pump motor purge water line inboard isolation check valve (i3)	2	A,C	I,A	L,S	RO	5.4-4(2)
F010	10	RIP pump motor purge water supply line valve	3	B	P		E1	5.4-4(1)
F011	10	RIP inflatable pressurized water line inboard valve	3	B	P		E1	5.4-4(1)
F013	10	RIP seal equalizing line valve	3	B	P		E1	5.4-4(1)
F500	10	RIP cooling water HX vent line inboard valve	3	B	P		E1	5.4-4(1)
F502	10	RIP drain line inboard valve	3	B	P		E1	5.4-4(1)
F505	10	RIP cooling water HX shell drain line inboard valve	3	B	P		E1	5.4-4(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

C12 Control Rod Drive System Valves

No.	Qty	Description (h) (i)	Safety Class (a)	Code Cat. (c)	Valve Func (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F719	4	Root valve charging line header pressure instrument line	2	B	P		E1	4.6-8(2)
F720	4	Root valve charging line header pressure instrument line	2	B	P		E1	4.6-8(2)

C41 Standby Liquid Control System Valves

F001	2	SLCS storage tank outlet line MOV	2	B	A	P S	RO 3 mo	9.3-1
F002	2	SLCS pump suction line maintenance valve	2	B	P		E1	9.3-1
F003	2	SLCS pump discharge line relief valve	2	C	A	R	5 yrs	9.3-1
F004	2	SLCS pump discharge line check valve	2	C	A	S	3 mo	9.3-1
F005	2	SLCS pump discharge line maintenance valve	2	B	P		E1	9.3-1
F006	2	SLCS pump discharge line MOV	2	A	I,A	L, P S	RO 3 mo	9.3-1
F007	1	SLCS injection line outboard check valve (h5)	2	C	A	S	RO	9.3-1
F008	1	SLCS injection line inboard check valve (h1)	2	A,C	I,A	L,S	RO	9.3-1
F018	1	SLCS storage tank sample line inboard shutoff valve	2	B	P		E1	9.3-1
F025	1	SLCS injection line test/vent line inb vlv	2	B	P		E1	9.3-1
F500	1	SLCS pump suction line drain line	2	B	P		E1	9.3-1
F501	2	SLCS pump discharge line drain line valve	2	B	P		E1	9.3-1

C51 Neutron Monitoring (ATIP) System Valves

J004	3	Isolation valve assembly Tip Ball Valve	2	A	I,A	L,P S	RO 3 mo	7.6-1(3)
J0[illegible]	3	Isolation valve assembly index shear valve	2	A,D	A	X	RO	7.6-1(3)
J011	3	Purge isolation valve	2	A	I,A	L,P S	RO 3 mo	7.6-1(3)

D23 Containment Atmosphere Monitoring System Valves

F001	2	CAMS drywell pressure instrument line outboard isolation valve	2	A	I,P	L,P	RO	7.6-7(2)
F004	2	CAMS drywell sample line outboard containment isolation valve	2	A	I,P	L,P	RO	7.6-7(2)
F005	2	CAMS drywell return line outboard containment isolation valve	2	A	I,P	L,P	RO	7.6-7(2)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

D23 Containment Atmosphere Monitoring System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F006	2	CAMS wetwell sample line outboard containment isolation valve	2	A	I,A	L,P	RO	7.6-7(2)
F007	2	CAMS wetwell return line outboard containment isolation valve	2	A	I,A	L,P	RO	7.6-7(2)
F008	2	CAMS rack drain line outboard containment isolation valve	2	A	I,A	L,P	RO	7.6-7(2)
F009	2	CAMS drywell pressure instrument line outboard isolation valve	2	B	P		E1	7.6-7(2)
F010	2	CAMS drywell sample line outboard valve	2	B	P		E1	7.6-7(2)
F011	2	CAMS drywell return line outboard valve	2	B	P		E1	7.6-7(2)
F012	2	CAMS wetwell sample line outboard valve	2	B	P		E1	7.6-7(2)
F013	2	CAMS wetwell return line outboard valve	2	B	P		E1	7.6-7(2)
F014	2	CAMS rack drain line outboard valve ment isoalation valve	2	B	P		E1	7.6-7(2)

E11 Residual Heat Removal System Valves

F001	3	Suppression pool suction valve	2	A	I,A	L,P S	RO 3 mo	5.4-10(3,4,6)
F002	3	RHR pump discharge line check valve	2	C	A	S	3 mo	5.4-10(3,4,6)
F003	3	RHR pump disharge line maintainence valve	2	B	P		E1	5.4-10(3,4,6)
F004	3	Heat Exchanger flow control valve	2	B	A	P S	2 yrs 3 mo	5.4-10(3,4,6)
F005	1	RPV injection valve (h6)	2	A	A	L,P S	RO CS	5.4-10(3)
F005	2	RPV injection valve (h6)	1	A	I,A	L,P S	RO CS	5.4-10(5,7)
F006	1	RPV injection line check valve	2	A	A	L,P S	RO 3 mo	5.5-10(3)
F006	2	RPV injection line check valve	1	A	I,A	L,P S	RO 3 mo	5.4-10(5,7)
F007	2	RPV injection line inboard maint. valve	1	B	P		E1	5.4-10(5,7)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E11 Residual Heat Removal System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F008	3	Suppression pool return line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-10(3,4,6)
F009	3	Shutdown Cooling suct. line maint. vlv	1	B	P		E1	5.4-10(2)
F010	3	Shutdown Cooling suct. line inb. iso. vlv (h6)	1	A	I,A	L,P S	RO CS	5.4-10(2)
F011	3	Shutdown Cooling suct line outb iso. vlv (h6)	1	A	I,A	L,P S	RO CS	5.4-10(2)
F012	3	Shutdown Cooling suction line adm. vlv	2	B	A	P S	2 yrs 3 mo	5.4-10(3,4,6)
F013	3	Heat exchanger bypass flow control vlv	2	B	A	P S	2 yrs 3 mo	5.4-10(3,4,6)
F014	2	Fuel Pool Cooling supply line inb MOV (h8)	2	B	A	P,S	RO	5.4-10(5,7)
F015	2	Fuel Pool Cooling supply line outb MOV (h8)	2	B	A	P,S	RO	5.4-10(5,7)
F016	2	Gate vlv-line from Fuel Pool Clg (FPC) (h8)	2	B	A	S	RO	5.4-10(2)
F017	2	Drywell spray line inboard valve	2	A	I,A	L,P S	RO 3 mo	5.4-10(5,7)
F018	2	Drywell spray line outboard valve	2	A	I,A	L,P S	RO 3 mo	5.4-10(5,7)
F019	2	Wetwell spray line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-10(5,7)
F020	3	RHR pump min flow bypass line check vlv	2	C	A	S	3 mo	5.4-10(3,4,6)
F021	3	RHR pump min flow bypass line MOV	2	A	I,A	L,P S	2 yrs 3 mo	5.4-10(3,4,6)
F022	3	Discharge line fill pump suction line valve	2	B	P		E1	5.4-10(3,4,6)
F023	3	Fill pump discharge line check valve	2	C	A	S	3 mo	5.4-10(3,4,6)
F024	3	Fill pump discharge line stop check valve	2	C	A	S	3 mo	5.4-10(3,4,6)
F025	3	Fill pump minimum flow line globe valve	2	B	P	S	E2	5.4-10(3,4,6)
F026	3	FHR pump suction to High Conductivity Waste (HCW)	2	B	P		E1	5.4-10(3,4,6)
F027	3	Bypass line around the check valve MPL E11-F002	2	B	P		E1	5.4-10(3,4,6)
F028	3	Heat exchanger outlet line relief valve	2	C	A	R	5 yrs	5.4-10(3,4,6)
F029	3	Inboard reactor well drain line valve	2	B	P		E1	5.4-10(3,4,6)
F030	3	Drain to radwaste valve	2	B	P		E1	5.4-10(3,4,6)
F031	3	Outb reactor well drain line valve (to SP)	2	A	I,P	L,P	RO	5.4-10(3,4,6)
F032	3	Shutoff valve - line from MUWC	2	B	P		E1	5.4-10(3,4,6)
F033	3	Check valve in the line from MUWC	2	C	A		E1	5.4-10(3,4,6)
F034	2	RPV injection line vent/test line outb vlv	2	B	P		E1	5.4-10(5,7)
F036	1	Press equal valve around chk vlv E11-F006	2	A	P		E1	5.4-10(3)
F036	2	Press equal valve around chk vlv E11-F006	1	A	P		E1	5.4-10(5,7)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E11 Residual Heat Removal System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F037	3	Shutdown cooling suction line test line	1	A	P		E1	5.4-10(2)
F039	3	Relief vlv around the MOV MPL E11-F011	1	C	A	R	5 yrs	5.4-10(2)
F040	3	Shutoff valve - line from MUWC	2	B	P		E1	5.4-10(2)
F041	3	Check valve - line from Make-Up Water Condenser (MUWC)	2	C	P		E1	5.4-10(2)
F042	3	Shutdown Cooling Mode suction line relief valve	2	C	A		E1	5.4-10(3,4,5)
F043	3	HX outlet to the Sampling System (SS) test inboard valve	2	B	P		E1	5.4-10(3,6,7)
F045	1	HX outlet to the PASS - inboard valve	2	B	A	P	2 yrs	5.4-10(3)
						S	3 mo	
F046	1	HX outlet to the PASS - outboard valve	2	B	A	P	2 yrs	5.4-10(3)
						S	3 mo	
F047	2	Shutoff - line from MUWC	2	B	P		E1	5.4-10(5,7)
F048	2	Check Valve - line from MUWC	2	C	P		E1	5.4-10(5,7)
F049	2	Drywell spray line vent & test line inboard valve	2	B	P		E1	5.4-10(5,7)
F051	3	Fill pump discharge line relief valve	2	B	A	R	5 yrs	5.4-10(3,4,6)
F052	4	Drain line for the suppression pool	2	B	P		E1	5.4-10(4)
F101	1	AC independent water addition input vlv	2	B	A	S	3 mo	5.4-10(7)
F102	1	AC independent water addition input vlv	2	B	A	S	3 mo	5.4-10(7)
F500	3	Heat exchanger inlet drain line outboard valve	2	B	P		E1	5.4-10(3,4,6)
F502	3	HX outlet line drain line inboard vlv	2	B	P		E1	5.4-10(3,4,6)
F504	3	RPV injection line vent line inb vlv	2	B	P		E1	5.4-10(3,4,7)
F506	1	RPV injection line drain line inb vlv	2	B	P		E1	5.4-10(3)
F506	2	RPV injection line drain line inb vlv	1	B	P		E1	5.4-10(5,7)
F508	3	Shutdown Cooling suct line vent line vlv	2	B	P		E1	5.4-10(2)
F509	2	Vent valve - FPC return line	2	B	P		E1	5.4-10(5,7)
F511	2	Drywell spray line inboard drain line vlv	2	B	P		E1	5.4-10(5,7)
F513	2	Drywell spray line inboard drain line vlv	2	B	P		E1	5.4-10(5,7)
F515	2	Wetwell spray line inboard drain line vlv	2	B	P		E1	5.4-10(5,7)
F517	3	RHR pump min flow line drn line inb vlv	2	B	P		E1	5.4-10(3,4,6)
F700	3	RHR pump suction line pressure instr line	2	B	P		E1	5.4-10(3,4,6)
F701	3	RHR pump suction line pressure instr line	2	B	P		E1	5.4-10(3,4,6)
F702	3	RHR pump discharge line press. instr line	2	B	P		E1	5.4-10(3,4,6)
F704	3	RHR pump discharge line press. instr line	2	B	P		E1	5.4-10(3,4,6)
F706	3	RHR pump discharge line press. instr line	2	B	P		E1	5.4-10(3,4,6)
F707	3	RHR pump discharge line press. instr line	2	B	P		E1	5.4-10(3,4,6)
F708	3	FT MPL E11-FT008 instr line inb root vlv	2	B	P		E1	5.4-10(3,4,6)
F709	3	FT MPL E11-FT008 instr line outb root vlv	2	B	P		E1	5.4-10(3,4,6)

Table 3.9-8 (Coninued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E11 Residual Heat Removal System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F710	3	FT MPL E11-FT008 instr line inb root vlv	2	B	P		E1	5.4-10(3,4,6)
F711	3	FT MPL E11-FT008 instr line outb root vlv	2	B	P		E1	5.4-10(3,4,6)
F712	3	Shutdown Cooling Mode suction line pressure instrument line	2	B	P		E1	5.4-10(3,4,6)
F713	3	Fill pump suction line instrument line valve	2	B	P		E1	5.4-10(3,4,6)
F714	1	Discharge to radwaste flow instr line	2	B	P		E1	5.4-10(4)
F716	1	Discharge to radwaste flow instr line	2	B	P		E1	5.4-10(4)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E22 High Pressure Core Flooder System Valves

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F001	2	Condensate Storage Pool (CSP) suction line MOV	2	B	A	P S	2 yrs 3 mo	6.3-7(2)
F002	2	CSP suction line check valve	2	C	A	S	3 mo	6.3-7(2)
F003	2	HPCF System injection valve (h6)	1	A	LA	LP S	RO CS	6.3-7(1)
F004	2	HPCF System inboard check valve	1	A,C	LA	LP S	RO 3 mo	6.3-7(1)
F005	2	Pump discharge line inboard main valve	1	B	P		E1	6.3-7(1)
F006	2	Suppression pool suction line MOV	2	A	LA	LP S	RO 3 mo	6.3-7(2)
F007	2	Suppression pool suction line check valve	2	C	A	S	3 mo	6.3-7(2)
F008	2	Test return line inboard valve	2	B	A	P S	2 yrs 3 mo	6.3-7(2)
F009	2	Test return line outboard valve	2	A	LA	LP S	RO 3 mo	6.307(2)
F010	2	Pump minimum flow bypass line MOV	2	A	LA	LP S	RO 3 mo	6.3-7(2)
F011	2	Bypass line shutoff valve around check valve E22-F002	2	C	P		E1	6.3-7(2)
F012	2	HPCI pump suction line drain line to HCW	2	B	P		E1	6.3-7(2)
F014	2	Pump discharge line fill line outboard check vlv	2	C	A	S	3 mo	6.3-7(1)
F015	2	Pump discharge line fill line inboard check vlv	2	C	A	S	3 mo	6.3-7(1)
F017	2	Pump discharge line test and vent line inboard valve	1	A	P		E1	6.3-7(1)
F019	2	Pressure equalizing valve around check valve E22-F004	1	A	P		E1	6.3-7(1)
F020	2	Suppression pool suction line relief valve	2	C	A	R	5 yrs	6.3-7(2)
F022	2	Suppression pool suction line test line valve	2	B	P		E1	6.3-7(2)
F023	2	Pump discharge line test line valve	2	B	P		E1	6.3-7(2)
F500	2	Pump discharge line high point vent inboard valve	2	B	P		E1	6.3-7(1)
F502	2	Pump discharge line drywell test line inboard valve	2	B	P		E1	6.3-7(1)
F700	2	Pump suction line pressure instrument line root valve	2	B	P		E1	6.3-7(2)
F701	2	Pump suction line pressure instrument line root valve	2	B	P		E1	6.3-7(2)
F702	2	Pump discharge line pressure instrument line inboard valve	2	B	P		E1	6.3-7(2)
F704	2	Pump discharge line pressure instrument line inboard valve	2	B	P		E1	6.3-7(2)

Table 3.9-8 (Continued)

ANSI/ASME CODE CLASS 1, 2 AND 3 IN-SERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E22 High Pressure Core Flooder System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F705	2	Pump discharge line pressure instrument line outboard valve	2	B	P		E1	6.3-7(2)
F706	2	Pump discharge line flow instrument line inboard valve	2	B	P		E1	6.3-7(2)
F707	2	Pump discharge line flow instrument line outboard valve	2	B	P		E1	6.3-7(2)
F708	2	Pump discharge line flow instrument line inboard valve	2	B	P		E1	6.3-7(2)
F709	2	Pump discharge line flow instrument line outboard valve	2	B	P		E1	6.3-7(2)

E31 Leak Detection and Isolation System Valves

F001	1	Drywell fission product monitoring line maintenance valve	2	B	P		E1	5.2-8(9)
F002	1	Drywell fission product monitoring line inboard isolation valve	2	A	I,A	L,P S	RO 3mo	5.2-8(9)
F003	1	Drywell fission product monitoring line outboard isolation valve	2	A	I,A	L,P S	RO 3 mo	5.2-8(9)
F004	1	Drywell fission product monitoring line outboard isolation valve	2	A	I,A	L,P S	RO 3 mo	5.2-8(9)
F005	1	Drywell fission product monitoring line inboard isolation valve	2	A	I,A	L,P S	RO 3 mo	5.2-8(9)
F006	1	Drywell fission product monitoring line maintenance valve	2	B	P		E1	5.2-8(9)
F009	1	Drywell cooler condensate sampling line vlv	2	A	I,P	L	RO	5.2-8(8)
F010	1	Drywell cooler condensate sampling line vlv	2	A	I,P	L	RO	5.2-8(8)
F701	4	RCIC instrument line manual isolation valve	2	B	P		E1	5.2-8(6)
F702	4	RCIC instrument line excess flow chk vlv (h3)	2	A,C	I,A	L,S	RO	5.2-8(6)
F703	4	RCIC instrument line manual isolation valve	2	B	P		E1	5.2-8(6)
F704	4	RCIC instrument line excess flow chk vlv (h3)	2	A,C	I,A	L,S	RO	5.2-8(6)

E51 Reactor Core Isolation Cooling System Valves

F001	1	Condensate Storage Pool (CSP) suction line MOV	2	B	A	P S	2 yrs 3 mo	5.4-8(1)
F002	1	CSP suction line check valve	2	C	A	S	3 mo	5.4-8(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E51 Reactor Core Isolation Cooling System (Continued)

No.	Qty	Description (b)(l)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F003	1	RCIC pump discharge line check valve	2	C	A	P S	2 yrs 3 mo	5.4-8(1)
F004	1	RCIC System injection valve (h6)	2	A	A	L,P S	RO CS	5.4-8(1)
F005	1	RCIC System discharge line testable check valve	2	C	A	L,P S	RO 3 mo	5.4-8(1)
F006	1	Suppression Pool (CSP) suction line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-8(1)
F007	1	Suppression Pool (CSP) suction line check vlv	2	C	A	S	3 mo	5.4-8(1)
F008	1	RCIC Sys suppr pool test return line MOV	2	A	A	P S	2 yrs 3 mo	5.4-8(1)
F009	1	RCIC Sys suppr pool test return line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-8(1)
F010	1	RCIC Sys minimum flow bypass line check vlv	2	C	A	P S	2 yrs 3 mo	5.4-8(1)
F011	1	RCIC Sys minimum flow bypass line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-8(1)
F012	1	RCIC turbine accessories cooling water line MOV	2	B	A	P S	2 yrs 3 mo	5.4-8(3)
F013	1	RCIC turbine accessories cooling water line PCV	2	B	A		E1	5.4-8(3)
F015	1	Barometric condenser condensate pump discharge line valve	2	B	P		E1	5.4-8(3)
F016	1	Barometric condenser condensate pump discharge line check valve	2	C	A	P S	2 yrs 3 mo	5.4-8(3)
F017	1	RCIC pump suction line relief valve	2	C	A	R	5 yrs	5.4-8(1)
F018	1	Valve in the bypass line around check valve E51-F003	2	B	P		E1	5.4-8(1)
F019	1	Pump discharge line test line valve	2	B	P		E1	5.4-8(1)
F020	1	Pump discharge line test line valve	2	B	P		E1	5.4-8(1)
F021	1	Pump discharge line fill line shutoff valve	2	B	P		E1	5.4-8(1)
F022	1	Pump discharge line fill line check valve	2	C	A	S	3 mo	5.4-8(1)
F023	1	Pump discharge line fill line check valve	2	C	A	S	3 mo	5.4-8(1)
F024	1	Pump discharge line test line valve	2	B	P		E1	5.4-8(1)
F025	1	Pump discharge line test line valve	2	B	P		E1	5.4-8(1)
F026	1	Valve in pressure equalizing line around E51-F005	2	B	P		E1	5.4-8(1)
F027	1	Suppression Pool (S/P) suction line test line valve	2	B	P		E1	5.4-8(1)
F028	1	Minimum flow bypass line test line valve	2	B	P		E1	5.4-8(1)
F029	1	Minimum flow bypass line test line valve	2	B	P		E1	5.4-8(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E51 Reactor Core Isolation Cooling System (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F030	1	Turbine accessories cooling water line relief valve	2	C	A	R	5 yrs	5.4-8(3)
F031	1	Barometric condenser condensate discharge line AOV to HCW	2	B	P		E1	5.4-8(3)
F032	1	Barometric condenser condensate discharge line AOV to HCW	2	B	P		E1	5.4-8(3)
F033	1	Discharge line fill line bypass line shutoff valve	2	B	P		E1	5.4-8(1)
F034	1	Barometric condenser condensate pump discharge line test line valve	2	B	P		E1	5.4-8(3)
F035	1	Steam supply line isolation valve	1	A	I,A	L,P S	RO 3 mo	5.4-892)
F036	1	Steam supply line isolation valve	1	A	I,A	L,P S	RO 3 mo	5.4-8(2)
F037	1	Steam admission valve	2	B	A	P S	2 yrs 3 mo	5.4-8(1)
F038	1	Turbine exhaust line check valve (h3)	2	A,C	I,A	L S	2 yrs RO	5.4-8(2)
F039	1	Turbine exhaust line MOV	2	A	I,A	L,P S	2 yrs 3 mo	5.4-8(1)
F044	1	Steam admission valve bypass line maintenance valve	2	B	P		E1	5.4-8(2)
F045	1	Steam admission valve bypass line MOV	2	B	A	P S	2 yrs 3 mo	5.4-8(2)
F046	1	Barometric condenser vacuum pump discharge line check valve (h3)	2	A,C	I,A	L S	RO RO	5.4-8(1)
F047	1	Barometric condenser vacuum pump discharge line MOV	2	A	I,A	L,P S	RO 3 mo	5.4-8(1)
F048	1	Steam supply line warm-up line valve	1	A	I,A	L,P S	RO 3 mo	5.4-8(2)
F049	1	Steam supply line test line valve	2	B	P		E1	5.4-8(2)
F050	1	Steam supply line test line valve	2	B	P		E1	5.4-8(2)
F051	1	Turbine exhaust line drain line valve	2	B	P		E1	5.4-893)
F052	1	Turbine exhaust line drain line valve	2	B	P		E1	5.4-8(3)
F053	1	Turbine exhaust line test line valve	2	B	P		E1	5.4-8(1)
F054	1	Turbine exhaust line vacuum breaker (h1)	2	C	A	R	RO	5.4-8(1)
F055	1	Turbine exhaust line vacuum breaker (h1)	2	C	A	R	RO	5.4-8(1)
F056	1	Steam supply line drain pot drain line test line valve	2	B	P		E1	5.4-8(1)
F057	1	Steam supply line drain pot drain line test drain line	2	B	P		E1	5.4-8(2)
F059	1	Barometric condenser vacuum pump discharge line test line valve	2	B	P		E1	5.4-8(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E51 Reactor Core Isolation Cooling System (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F500	1	Pump discharge line vent line valve	2	B	P		E1	5.4-8(1)
F501	1	Pump discharge line vent line valve	2	B	P		E1	5.4-8(1)
F502	1	Pump discharge line drain line valve	2	B	P		E1	5.4-8(1)
F503	1	Pump discharge line drain line valve	2	B	P		E1	5.4-8(1)
F700	1	Pump suction line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F701	1	Pump suction line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F702	1	Pump discharge line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F703	1	Pump discharge line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F704	1	Pump discharge line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F705	1	Pump discharge line pressure instrumentation instrument root valve	2	B	P		E1	5.4-8(1)
F706	1	Pump discharge line flow instrument root valve	2	B	P		E1	5.4-8(1)
F707	1	Pump discharge line flow instrument root valve	2	B	P		E1	5.4-8(1)
F708	1	Pump discharge line flow instrument root valve	2	B	P		E1	5.4-8(1)
F709	1	Pump discharge line flow instrument root valve	2	B	P		E1	5.4-8(1)
F710	1	Pump discharge line pressure instrument root valve	2	B	P		E1	5.4-8(1)
F711	1	Pump discharge line pressure instrument root valve	2	B	P		E1	5.4-8(1)
F712	1	Turbine accessories cooling water line instrument root valve	2	B	P		E1	5.4-8(3)
F713	1	Turbine accessories cooling water line instrument root valve	2	B	P		E1	5.4-8(3)
F714	1	Turbine accessories cooling water line instrument root valve	2	B	P		E1	5.4-8(3)
F716	1	Steam supply line pressure instrument root valve	2	B	P		E1	5.4-8(2)
F717	1	Steam supply line pressure instrument root valve	2	B	P		E1	5.4-8(2)
F718	1	Steam supply line drain pot instrument root valve	2	B	P		E1	5.4-8(2)
F719	1	Steam supply Line drain pot instrument root valve	2	B	P		E1	5.4-8(2)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

E51 Reactor Core Isolation Cooling System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F720	1	Steam supply line drain pot instrument root valve	2	B	P		E1	5.4-8(2)
F721	1	Steam supply line drain pot instrument root valve	2	B	P		E1	5.4-8(2)
F722	1	Turbine exhaust pressure instrument root valve	2	B	P		E1	5.4-8(3)
F723	1	Turbine exhaust pressure instrument root valve	2	B	P		E1	5.4-8(3)
F724	1	Turbine exhaust pressure between rupture disk instrument root valve	2	B	P		E1	5.4-8(3)
F725	1	Turbine exhaust pressure between rupture disk instrument root valve	2	B	P		E1	5.4-8(3)
D014	1	Turbine exhaust pressure rupture disk	2	D	A	Rplc.	5 yrs	5.4-8(3)
D015	1	Turbine exhaust pressure rupture disk	2	D	A	Rplc.	5 yrs	5.4-8(3)

G31 Reactor Water Cleanup System Valves

F001	1	Line inside containment from RHR system maintenance valve	1	B	P		E1	5.4-12(1)
F002	1	CUW System suction line inboard isolation valve (h1)	1	A	I,A	L,P,S	RO	5.4-12(1)
F003	1	CUW System suction line outboard isolation valve (h3)	1	A	I,A	L,P,S	RO CS	5.4-12(1)
F012	1	CUW System RPV head spray line outboard isolation valve (h3)	1	A	I,A	L,P,S	RO CS	5.4-12(1)
F018	1	CUW System RPV head spray line inboard check valve (h1)	1	A,C	I,A	L,P,S	RO	5.4-12(1)
F019	1	CUW Sys bottom head drain line maintenance valve	1	B	P		E1	5.4-12(1)
F050	1	Test line off the suct line outboard isolation valve G31-F003	2	B	P		E1	5.4-12(1)
F058	1	Test line off RPV head spray line outboard isolation valve	2	B	P		E1	5.4-12(1)
F060	1	RPV bottom head drain line sample line test line valve	2	B	P		E1	5.4-12(1)
F070	1	RPV bottom head drain line sample line maintenance valve	2	B	P		E1	5.4-12(1)
F071	1	RPV bottom head drain line sample line inboard valve	2	A	I,A	L,P,S	RO 3 mo	5.4-12(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

G31 Reactor Water Cleanup System Valves (Continued)

No.	Qty	Description (h) (i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F072	1	RPV bottom head drain line sample line outboard valve	2	A	I,A	L,P S	RO 3 mo	5.4-12(1)
F500	1	CUW Sys bottom head drain line drain vlv	2	B	P		E1	5.4-12(1)
F501	1	CUW Sys bottom head drain line drain vlv	2	B	P		E1	5.4-12a
F700	2	CUW System suction line FE upstream instrument manual isolation valve	2	B	P		E1	5.4-12(1)
F701	2	CUW System suction line FE downstream instrument manual isolation valve	2	B	P		E1	5.4-12(1)
F702	2	CUW System suction line FE upstream instrument excess flow check valve (h3)	2	A,C	I,A	L,S,P	RO	5.4-12(1)
F703	2	CUW System suction line FE downstream instrument excess flow check valve (h3)	2	A,C	I,A	L,S,P	RO	5.4-12(1)

G41 Fuel Pool Cooling and Cleanup Valves

F015	2	FPC system heat exchanger outlet line maintenance valve	3	B	P		E1	9.1-1(2)
F016	1	FPC system discharge line to spent fuel pool check valve	3	C	A	S	3 mo	9.1-1(2)
F017	1	FPC system discharge line to spent fuel pool maintenance valve	3	B	P		E1	9.1-1(2)
F018	1	FPC system discharge line to spent fuel pool check valve	3	C	A	S	3 mo	9.1-1(2)
F019	2	FPC system discharge line to spent fuel pool valve	3	B	P		E1	9.1-1(1)
F020	2	FPC system discharge line to spent fuel pool check valve	3	C	A	S	3 mo	9.1-1(1)
F022	1	FPC system discharge line to reactor well maintenance valve	3	B	P		E1	9.1-1(2)
F023	1	FPC system discharge line to reactor well check valve (h7)	3	C	A	S	RO	9.1-1(2)
F091	1	FPC system supply line from SPCU check vlv	3	C	A	S	3 mo	9.1-1(2)
F093	1	FPC system RHR return line valve to FPC	3	B	P		E1	9.1-1(2)
F094	1	FPC system RHR return line check valve to FPC (h7)	3	C	A	S	RO	9.1-1(2)
F095	1	FPC system discharge line to spent fuel pool sample line	3	B	P		E1	9.1-1(2)
F506	1	FPC system line valve from RHR-to-FPC line to LCW	3	B	P		E1	9.1-1(7)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

G51 Suppression Pool Cleanup System Valves

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F001	1	SPCU suction Line inboard isolation valve	2	A	I,A	L,P S	RO 3 mo	9.5-1
F002	1	SPCU suction line outboard isolation valve	2	A	I,A	L,P S	RO 3mo	9.5-1
F006	1	SPCU return line isolation valve	2	A	I,A	L,P S	RO 3 mo	9.5-1
F007	1	SPCU return line isolation valve	2	A	I,A	L,P S	RO 3 mo	9.5-1

K17 Radwaste System Valves

F003	1	Drywell LCW sump pump inboard disch. line isolation valve	2	A	I,A	L,P S	RO 3 mo	11.2-2(29)
F004	1	Drywell LCW sump pump outboard disch. line isolation valve	2	A	I,A	L,P S	RO 3 mo	11.2-2(29)
F103	1	Drywell HCW sump pump inboard disch line isolation valve	2	A	I,A	L,P S	RO 3 mo	11.2-2(29)
F104	1	Drywell HCW sump pump outboard disch line isolation valve	2	A	I,A	L,P S	RO 3 mo	11.2-2(29)

P11 Makeup Water (Purified) System Valves

F141	1	Outboard isolation valve	2	A	I,P	L	RO	9.2-5(2)
F142	1	Inboard isolation valve	2	A,C	I,P	L	RO	9.2-5(2)

P21 Reactor Building Cooling Water System Valves

F001	6	Pump discharge line check valve	3	C	A	S	E2	9.2-1(1,4,7)
F002	6	Pump discharge line maintenance valve	3	B	P		E1	9.2-1(1,4,7)
F003	6	Heat exchanger inlet line valve	3	B	P		E1	9.2-1(1,4,7)
F004	6	Heat exchanger outlet line MOV	3	B	P	P	2 yrs	9.2-1(1,4,7)
F005	3	Cold water line to hot/cold water blender	3	B	P		E1	9.2-1(1,4,7)
F006	3	Hot/cold water blender valve - cold water	3	B	A	S	E2	9.2-1(1,4,7)
F007	3	Hot/cold water blender outlet line valve	3	B	P		E1	9.2-1(1,4,7)
F008	3	Hot/cold water blender cold water byps line	3	B	P		E1	9.2-1(1,4,7)
F009	3	Hot water line to hot/cold water blender	3	B	P		E1	9.2-1(1,4,7)
F010	3	Hot/cold water blender valve - hot water	3	B	A	S	E2	9.2-1(1,4,7)
F011	3	Hot/cold water blender hot water bypass line	3	B	P		E1	9.2-1(1,4,7)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P21 Reactor Building Cooling Water System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F012	3	Cooling water supply line to RCIC System maintenance valve	3	B	P		E1	9.2-1(2,5,8)
F013	3	Cooling wtr return line from RHR Sys MOV	3	B	A	P S	2yrs 3 mo	9.2-1(2,5,8)
F014	3	Cooling water return line from RHR Hx maintenace valve	3	B	P		E1	9.2-1(2,5,8)
F015	6	Pump suction line maintenance valve	3	B	P		E1	9.2-1(1,4,7)
F016	3	Surge tank outlet line to RCW pump suction	3	B	P		E1	9.2-1(2,5,8)
F017	3	Surge tank make-up water line from SPCU	3	B	P		E1	9.2-1(2,5,8)
F018	3	Surge tank make-up water line from SPCU	3	B	P	P	2 yrs	9.2-1(2,5,8)
F019	3	Surge tank make-up from MUWP	3	B	P	P	2 yrs	9.2-1(2,5,8)
F020	3	Surge tank make-up water line from MUWP	3	B	P		E1	9.2-1(2,5,8)
F021	3	Chemical addition tank inlet line valve	3	B	P		E1	9.2-1(1,4,7)
F022	3	Chemical addition tank outlet line valve	3	B	P		E1	9.2-1(1,4,7)
F024	6	Cooling water supply line to HECW refrigator maintenance valve	3	B	P		E1	9.2-1(2,5,8)
F025	6	Cooling wtr supply line to HECW refrig PCV	3	B	A	P S	2 yrs E2	9.2-1(2,5,8)
F026	6	Cooling water supply line to HECW refrigator maintenance valve	3	B	P		E1	9.2-1(2,5,8)
F027	6	Cooling water line to HECW refrigator bypass line	3	B	P		E1	9.2-1(2,5,8)
F028	6	Cooling water return line from HECW refrig	3	B	P		E1	9.2-1(2,5,8)
F029	2	Cooling water supply line to FPC HX	3	B	P		E1	9.2-1(2,5)
F030	2	Cooling water return line from FPC HX	3	B	P		E1	9.2-1(2,5)
F031	2	Cooling water supply line to FPC pump room air conditioniag	3	B	P		E1	9.2-1(2,5)
F032	2	Cooling wtr return line from FPC pump room air conditioner	3	B	P		E1	9.2-1(2,5)
F033	2	Cooling wtr line to PCV Atmos Monit Sys clr	3	B	P		E1	9.2-1(2,5)
F034	2	Return line from PCV Atmos Monit Sys clr	3	B	P		E1	9.2-1(2,5)
F035	2	Cooling wtr supply line to SGTS rm air cond.	3	B	P		E1	9.2-1(2,5)
F036	2	Cooling water return line fr SGTS room air conditioner	2	B	P		E1	9.2-1(2,5)
F037	2	Cooling water supply line to FCS room air conditioner	3	B	P		E1	9.2-1(2,5)
F038	2	Cooling water return line fr FCS room air conditioner	3	B	P		E1	9.2-1(2,5)
F039	3	Cooling water supply line to RHR equipment room air conditioner	3	B	P		E1	9.2-1(2,5,8)
F040	3	Cooling water return line from RHR equipment room air conditioner	3	B	P		E1	9.2-1(2,5,8)
F041	3	Cooling water supply line to RHR pump mtr	3	B	P		E1	9.2-1(2,5,8)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P21 Reactor Building Cooling Water System Valves (Continued)

No.	Qty	Description (b)(f)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F042	3	Cooling water return line fr RHR pump mtr	3	B	P		E1	9.2-1(2,5,8)
F043	3	Clng wtr spry line to RHR pump mech seals	3	B	P		E1	9.2-1(2,5,8)
F044	3	Clng wtr return line fr RHR pump mech seals	3	B	P		E1	9.2-1(2,5,8)
F045	1	Cooling water supply line to RCIC equipment room air conditioner	3	B	P		E1	9.2-1(2)
F046	1	Cooling water supply line from RCIC equipment room air conditioner	3	B	P		E1	9.2-1(2)
F047	2	Cooling water supply line to HPCF equipment room air conditioner	3	B	P		E1	9.2-1(5,8)
F048	2	Cooling water supply line from HPCF equipment room air conditioner	3	B	P		E1	9.2-1(5,8)
F049	2	Cooling water supply line to HPCF pump motor bearing	3	B	P		E1	9.2-1(5,8)
F050	2	Cooling water return line from HPCF pump motor bearing	3	B	P		E1	9.2-1(5,8)
F051	2	Cooling water supply line to HPCF pump mechanical seals	3	B	P		E1	9.2-1(5,8)
F052	2	Cooling water return from HPCF pump mechanical seals	3	B	P		E1	9.2-1(5,8)
F053	2	Surge tank outlet line to HECW System	3	B	P		E1	9.2-1(2,5)
F055	6	Cooling water return line from Emer Diesel Generator	3	B B	A	P S	2 yrs 3 mo	9.2-1(2,5,8)
F056	6	Cooling water return line from Emer Diesel Generator	3	B	P		E1	9.2-1(2,5,8)
F057	2	Cooling water line to PCV Atmos Monitor System air conditioner	3	B	P		E1	9.2-1(2,5)
F058	2	Return line from PCV Atmos Monitor System air conditioner	3	B	P		E1	9.2-1(2,5)
F061	3	Cooling water line Emer Diesel Generators	3	B	P		E1	9.2-1(2,5,8)
F071	6	Cooling water supply line to non-essential coolers	3	B	P		E1	9.2-1(2,5,8)
F072	6	Cooling water supply line to non-essential coolers	3	B	A	P S	2 yrs 3 mo	9.2-1(2,5,8)
F075	2	Cooling water supply line to PCV outboard isolation valve (h3)	2	A	I,A	L,P S	RO CS	9.2-1(3,6)
F076	2	Cooling water supply line to PCV inboard check isolation valve (h1)	2	A,C	I,A	L,P,S	RO	9.2-1(3,6)
FC80	2	Cooling water return line fr PCV inboard isolation valve (h1)	2	A	I,A	L,P,S	RO	9.2-1(3,6)
F081	2	Cooling water return line fr PCV outboard isolation valve (h3)	2	A	I,A	L,P S	RO CS	9.2-1(3,6)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P21 Reactor Building Cooling Water System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F083	3	Cooling water return line from non essential coolers (h4)	3	C	A	S	RO	9.2-1(2,5,8)
F084	3	Cooling water return line fr control byps line	3	B	P		E1	9.2-1(2,5,8)
F175	3	Cooling water supply to RHR System HX pressure relief valve	3	C	A	R	5 yrs	9.2-1(2,5,8)
F220	6	Bypass line around RCW Sys otlt line MOV	3	B	P		E1	9.2-1(1,4,7)
F251	2	Cooling water supply line to PCV test line	2	B	P		E1	9.2-1(3,6)
F252	2	Cooling water return line fr PCV test line	2	B	P		E1	9.2-1(3,6)
F501	6	Heat exchanger shell side vent line	3	B	P		E1	9.2-1(1,4,7)
F502	6	Heat exchanger shell side drain line	3	B	P		E1	9.2-1(1,4,7)
F503	3	Surge tank drain line to SD.	3	B	P		E1	9.2-1(2,5,8)
F601	3	Cooling water supply line to RHR System drain line to SD	3	B	P		E1	9.2-1(2,5,8)
F602	3	Cooling water supply line to RHR System drain line to HCW	3	B	P		E1	9.2-1(2,5,8)
F603	3	Cooling water return line from RHR HX drain line to SD	3	B	P		E1	9.2-1(2,5,8)
F604	3	Cooling water return line from RHR HX drain line to HCW	3	B	P		E1	9.2-1(2,5,8)
F701	6	Pump discharge line press instr line	3	B	P		E1	9.2-1(1,4,7)
F702	6	HX discharge line sample line valve	3	B	P		E1	9.2-1(1,4,7)
F703	3	Cooling water supply line press instr line	3	B	P		E1	9.2-1(1,4,7)
F704	3	Cooling water supply line sample line valve	3	B	P		E1	9.2-1(1,4,7)
F705	3	Cooling water supply line elbow tap instr line	3	B	P		E1	9.2-1(1,4,7)
F706	3	Cooling water supply line elbow tap instr line	3	B	P		E1	9.2-1(1,4,7)
F707	3	Cooling wtr sply line to RHR Sys FT instr line	3	B	P		E1	9.2-1(2,5,8)
F708	3	Cooling wtr sply line to RHR Sys FT instr line	3	B	P		E1	9.2-1(2,5,8)
F709	3	Cooling wtr rtn line fr RHR HX sample line	3	B	P		E1	9.2-1(2,5,8)
F710	6	Pump suction line PX instr line	3	B	P		E1	9.2-1(1,4,7)
F711	6	Pump suction line press instr line	3	B	P		E1	9.2-1(1,4,7)
F712	3	Surge tank level instr root valve	3	B	P		E1	9.2-1(2,5,8)
F713	3	Surge tank level instr line root valve	3	B	P		E1	9.2-1(2,5,8)
F714	3	Surge tank level instr line root valve	3	B	P		E1	9.2-1(2,5,8)
F717	3	Cooling water line to DG instr line	3	B	P		E1	9.2-1(2,5,8)
F718	3	Return water line from DG instr line	3	B	P		E1	9.2-1(2,5,8)
F719	3	Cooling wtr line to DG instr line	3	B	P		E1	9.2-1(2,5,8)
F720	3	Return wtr line from DG instr line	3	B	P		E1	9.2-1(2,5,8)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P24 HVAC Normal Cooling Water System Valves

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F053	1	HNCW supply line outboard isolation valve	2	A	LA	L,P S	RO 3 mo	9.2-2
F054	1	HNCW supply line inboard isolation check valve (h1)	2	A,C	LA	L,S	RO	9.2-2
F141	1	HNCW return inboard isolation valve (h1)	2	A	LA	L,P,S	RO	9.2-2
F142	1	HNCW return outboard isolation valve	2	A	LA	L,P S	RO 3 mo	9.2-2

P25 HVAC Emergency Cooling Water System Valves

F001	5	Pump discharge line check valve	3	C	P	S	E2	9.2-3(1,2,3)
F002	5	Pump discharge line maintenance valve	3	B	P		E1	9.2-1(1,2,3)
F003	5	Refrig. outlet line maintenance valve	3	B	P		E1	9.2-1(1,2,3)
F004	2	Maint valve at HECW supply to MCR cooler TCV	3	B	P		E1	9.2-3(1,2,3)
F005	2	HECW supply to MCR cooler Temp Cont Vlv (TCV)	3	B	A	S	E2	9.2-1(1,2,3)
F006	2	Maint valve at HECW supply to MCR cooler TCV	3	B	P		E1	9.2-3(1,2,3)
F007	6	Maint vlv at HECW supply to MCR cooler	3	B	P		E1	9.2-3(1,2,3)
F008	6	[illegible] vlv at HECW return from MCR cooler	3	B	P		E1	9.2-3(1,2,3)
F009	2	Temp suction line maintenance valve	3	B	P		E1	9.2-3(1,2,3)
F010	2	TCV byp at HECW disch to MCR cooler	3	B	P		E1	9.2-3(1,2,3)
F011	3	Pump suct line/disch line PCV maint vlv	3	B	P		E1	9.2-3(1,2,3)
F012	3	Pump suction line/disch line PCV	3	B	A	S	E2	9.2-3(1,2,3)
F013	3	Pump suction line/disch line PCV maint vlv	3	B	P		E1	9.2-3(1,2,3)
F014	3	Pump suct line/disch line PCV bypass line	3	B	P		E1	9.2-3(1,2,3)
F015	3	Maint vlv at HECW supply to C/B Essential Elec Equip Rm cooler TCV	3	B	P		E1	9.2-3(1,2,3)
F016	3	HECW supply to C/B Essential Elec Equip Rm cooler Temp Cont Vlv	3	B	A	S	E2	9.2-3(1,2,3)
F017	3	Maint vlv at HECW supply to C/B Essential Elec Equip Rm cooler TCV	3	B	P		E1	9.2-3(1,2,3)
F018	6	HECW supply to C/B Essent Elec Equip Rm cooler maint valve	3	B	P		E1	9.2-3(1,2,3)
F019	6	Maint vlv at HECW return from C/B Essent Elec Equip Rm cooler	3	B	P		E1	9.2-3(1,2,3)
F020	3	TCV byp vlv at HECW supply to C/B Essent Elec Equip Rm cooler	3	B	P		E1	9.2-3(1,2,3)
F021	3	Maint vlv at HECW supply to DG zone cooler TCV	3	B	P		E1	9.2-3(1,2,3)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P25 HVAC Emergency Cooling Water System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F022	3	HECW supply to DG zone cooler Temp Cont Valve	3	B	A	S	E2	9.2-3(1,2,3)
F023	3	Maint vlv at HECW supply to DG zone cooler TCV	3	B	P		E1	9.2-3(1,2,3)
F024	6	Maint vlv at HECW supply to DG zone cooler	3	B	P		E1	9.2-3(1,2,3)
F025	6	Maint vlv at HECW return from DG zone cooler	3	B	P		E1	9.2-3(1,2,3)
F026	3	TCV byp v[illegible] HECW supply to DG zone cooler	3	B	P		E1	9.2-3(1,2,3)
F030	3	Chemical addition tank return vlv from HECW	3	B	P		E1	9.2-3(1,2,3)
F031	3	Chemical addition tank feed valve to HECW	3	B	P		E1	9.2-3(1,2,3)
F050	2	Make-up Water Purified (MUWP) line to pump suction check valve	3	C	A	S	E2	9.2-3(1,2,3)
F070	5	Pump disch line drain valve	3	B	P		E1	9.2-3(1,2,3)
F400	5	Pump drain line valve	3	B	P		E1	9.2-3(1,2,3)
F401	5	Pump bearing cooling wtr needle vlv	3	B	P		E1	9.2-3(1,2,3)
F402	3	Refrig outlet line sample valve	3	B	P		E1	9.2-3(1,2,3)
F700	5	Pump disch line pressure instr line root valve	3	B	P		E1	9.2-3(1,2,3)
F701	5	FE P25-FE003 upstrm instr line root valve	3	B	P		E1	9.2-3(1,2,3)
F702	5	FE P25-FE003 dwnstrm instr line root valve	3	B	P		E1	9.2-3(1,2,3)
F703	5	Pump suction pressure instr line root valve	3	B	P		E1	9.2-3(1,2,3)
F704	6	Pump suct/disch line dpt instr line root vlv	3	B	P		E1	9.2-3(1,2,3)

P41 Reactor Service Water System Valves

F001	6	Pump discharge line check flow	3	C	A	S	E2	9.2-7(1,2,3)
F002	6	Pump discharge line maintenance valve	3	B	P		E1	9.2-7(1,2,3)
F003	9	Service water inlet line to RCW System heat exchanger	3	B	P	P S	2 yrs E2	9.2-7(1,2,3)
F004	6	Service water inlet valve to service water strainer	3	B	P	P	2 yrs	9.2-7(1,2,3)
F005	9	Service water outlet valve from RCW heat exchanger	3	B	P	P	2 yrs	9.2-7(1,2,3)
F006	6	Service water strainer blowout valve	3	B	P	P	2 yrs	9.2-7(1,2,3)
F007	9	Supply line from Domestic water check valve	3	C	P	S	3 mo	9.2-7(1,2,3)
F008	9	Supply line from Domestic water check valve	3	C	P	S	3 mo	9.2-7(1,2,3)
F009	9	Supply valve from Domestic Water (DW) Sys	3	B	A	P S	2 yrs E2	9.2-7(1,2,3)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P41 Reactor Service Water System Valves (Continued)

No.	Qty	Description (b)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F010	9	RCW HX tube side (service water side) relief valve	3	C	P	R	5 yrs	9.2-7(1,2,3)
F011	9	Bypass line around RCW HX outlet line outlet valve MOV P41-F005	3	C	P		E1	9.2-7(1,2,3)
F012	9	Service water sampling valve	3	B	P		E1	9.2-7(1,2,3)
F013	6	Service water strainer outlet valve	3	B	A	P S	2 yrs E2	9.2-7(1,2,3)
F014	3	Common service water strainer outlet valve	3	B	P	P	2 yrs	9.2-7(1,2,3)
F015	3	Discharge line to discharge canal MOV	3	B	P		E1	9.2-7(1,2,3)
F501	9	RCW HX shell side drain valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F502	9	RCW HX shell side vent valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F503	9	RCW HX shell side drain valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F504	9	RCW HX shell side vent valve to SWSD	3	B	P		E1	9.2-7(1,2,3)
F701	6	Pump discharge pressure instr root valve	3	B	P		E1	9.2-7(1,2,3)
F702	3	Service water supply pressure instr root valve	3	B	P		E1	9.2-7(1,2,3)
F703	6	Diff P across service water strainer upstream instrument root valve	3	B	P		E1	9.2-7(1,2,3)
F704	6	Diff P across service water strainer downstream instrument root valve	3	B	P		E1	9.2-7(1,2,3)
F705	9	Service water diff P across RCW HX upstream instr root valve	3	B	P		E1	9.2-7(1,2,3)
F706	9	Service water diff P across RCW HX downstream instr root valve	3	B	P		E1	9.2-7(1,2,3)

P51 Service Air System Valves

F131	1	Outboard isolation manual valve	2	A	LP	L	RO	9.3-7
F132	1	Inboard isolation manual valve	2	A	LP	L	RO	9.3-7

P52 Instrument Air System Valves

F276	1	Outboard isolation valve	2	A	LA	LP	RO	9.3-6
F277	1	Inboard isolation check valve	2	AC	LA	L	2 yrs	9.3-6

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

P54 High Pressure Nitrogen Gas Supply System Valves (Continued)

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F002	4	Nitrogen bottles N2 supply line valve	3	B	P		E1	6.7-1
F003	2	Nitrogen bottles N2 supply line MOV	3	B	A	P	2 yrs	6.7-1
						S	3 mo	
F004	2	N2 bottle supply line PCV maint valve	3	B	P		E1	6.7-1
F005	2	N2 bottle supply line PCV	3	B	A		E1	6.7-1
F006	2	N2 bottle supply line PCV maint valve	3	B	P		E1	6.7-1
F007	2	Safety grade N2 supply line iso valve	2	A	I,A	L,P	RO	6.7-1
						S	3 mo	
F008	2	Safety grade N2 supply line iso chk vlv	2	A,C	I,A	L,S	RO	6.7-1
F009	8	Safety grade N2 supply line to SRV	3	B	P		E1	6.7-1
F010	2	Bypass line around the N2 bottle supply line PCV	3	B	P		E1	6.7-1
F011	2	N2 bottle supply line relief valve	3	C	A	R	5 yrs	6.7-1
F012	2	MOV at safety/non-safety boundary	3	A	A	P	2 yrs	6.7-1
						S	3 mo	
F200	1	Non-safety N2 supply line iso valve	2	A	I,A	L,P	2 yrs	6.7-1
						S	3 mo	
F209	1	Non-safety N2 supply line iso chk vlv	2	A,C	I,A	L,S	RO	6.7-1

T22 Standby Gas Treatment System Valves

F001	2	Fuel handling floor inlet butterfly valve	3	B	A	P	2 yrs	6.5-1
						S	3 mo	
F002	2	Dryer inlet butterfly valve	3	B	A	P	2 yrs	6.5-1
						S	3 mo	
F003	2	Dryer exhaust gravity damper	3	B	A	P	2 yrs	6.5-1
						S	3 mo	
F004	2	Filter train exhaust butterfly valve	3	B	A	P	2 yrs	6.5-1
						S	3 mo	
F006	1	Filter train R112 injection line valve	3	B	P		E1	6.5-1
F007	1	Filter train DOP injection line valve to pre HEPA filter	3	B	P		E1	6.5-1
F008	1	Filter train DOP sampling line valve downstream of pre HEPA	3	B	P		E1	6.5-1
F009	1	Filter train DOP sampling line valve downstream of pre HEPA	3	B	P		E1	6.5-1
F010	1	Filter train DOP injection line valve downstream of charcoal absorbent	3	B	P		E1	6.5-1
F011	1	Filter train DOP sampling line valve downstream of charcoal absorbent	3	B	P		E1	6.5-1

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

T22 Standby Gas Treatment System Valves

No.	Qty	Description (b) (i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para. (e)	Test Freq. (f)	SSAR Fig. (g)
F012	1	Filter train DOP sampling line valve downstream of after HEPA	3	B	P		E1	6.5-1
F014	1	STGS sample line valve	3	B	P		E1	6.5-1
F015	1	FRM discharge to stack valve	3	B	P		E1	6.5-1
F500	2	Dryer unit vent line valve	3	B	P		E1	6.5-1
F501	2	Dryer unit drain line valve	3	B	P		E1	6.5-1
F504	2	Dryer unit vent line valve	3	B	P		E1	6.5-1
F505	2	Exhaust fan vent line valve	3	B	P		E1	6.5-1
F506	1	Filter train vent line valve	3	B	P		E1	6.5-1
F507	1	Filter train vent line valve	3	B	P		E1	6.5-1
F508	1	Filter train vent line valve	3	B	P		E1	6.5-1
F509	1	Filter train vent line valve	3	B	P		E1	6.5-1
F510	1	Filter train vent line valve	3	B	P		E1	6.5-1
F511	1	Exhaust stack drain line valve	3	B	P		E1	6.5-1
F700	2	Dryer unit demister dp instrument line valve	3	B	P		E1	6.5-1
F701	2	Dryer unit demister dp instrument line valve	3	B	P		E1	6.5-1
F705	1	Filter train prefilter dp instrument line valve	3	B	P		E1	6.5-1
F706	1	Filter train prefilterdp instrument line valve	3	B	P		E1	6.5-1
F707	1	Filter train preHEPA dp instrument line valve	3	B	P		E1	6.5-1
F708	1	Filter train preHEPA dp instrument line valve	3	B	P		E1	6.5-1
F709	1	Filter train charcoal absorber dp inst line vlv	3	B	P		E1	6.5-1
F710	1	Filter train charcoal absorber dp inst line vlv	3	B	P		E1	6.5-1
F711	1	Filter train after HEPA dp inst line valve	3	B	P		E1	6.5-1
F712	1	Filter train after HEPA dp inst line valve	3	B	P		E1	6.5-1
F713	2	Filter train exhaust flow instrument line valve	3	B	P		E1	6.5-1
F714	2	Filter train exhaust flow instrument line valve	3	B	P		E1	6.5-1

T31 Atmospheric Control System Valves

F001	1	N2 supply line from Reactor Building HVAC	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F002	1	N2 supply line to drywell inboard containment isoaltion valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F003	1	N2 supply line to wetwell inboard containment isoaltion valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F004	1	Containment atmosphere exhaust line from drywell isoaltion valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F005	1	Drywell atmosphere exhaust line valve T31-F004 bypass line	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F006	1	Containment atmosphere exhaust line form wetwell isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F007	1	Wetwell overpressure line valve	2	A	P	L,P	2 yrs	6.2-39(1)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

T31 Atmospheric Control System Valves

No.	Qty	Description (h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F008	1	Containment atmosphere exhaust line to SGTS	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F009	1	Containment atmosphere exhaust line to R/B HVAC	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F010	1	Drywell overpressure line valve	2	A	P	L,P	2 yrs	6.2-39(1)
F023	1	N2 supply line from K-5 outboard containment isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F039	1	N2 supply line from K-5 outboard containment isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F040	1	N2 supply line from K-5 to drywell inboard isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F041	1	N2 supply line from K-5 to wetwell inboard isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-39(1)
F044	8	Drywell/wetwell vacuum breaker valve	2	C	A	F R	RO E3	6.2-39(2)
F050	1	N2 supply line to drywell test line valve	2	B	P		E1	6.2-39(1)
F051	1	Containment atmosphere exhaust line test line valve	2	B	P		E1	6.2-39(1)
F054	1	Drywell personnel air lock hatch test line valve	2	B	P		E1	6.2-39(2)
F055	1	N2 supply line from test line valve	2	B	P		E1	6.2-39(1)
F056	1	Wetwell personnel air lock hatch test line valve	2	B	P		E1	6.2-39(2)
F700	1	N2 supply line to drywell FE upstream instrument line	2	B	P		E1	6.2-39(1)
F701	1	N2 supply line to drywell FE downstream instrument line	2	B	P		E1	6.2-39(1)
F702	1	N2 supply line to wetwell FE upstream instrument line	2	B	P		E1	6.2-39(1)
F703	1	N2 supply line to wetwell FE downstream instrument line	2	B	P		E1	6.2-39(1)
F720	2	DW/WW vacuum breaker valve N2 supply line isolation valve	8	A	I,P	L	RO	6.2-39(2)
F730	1	Drywell pressure instrument line isolation valve	2	B	P		E1	6.2-39(2)
F731	1	Drywell pressure instrument line solenoid isolation valve	2	A	I,P	L,P	RO	6.2-39(2)
F732	2	Drywell pressure instrument line valve	2	B	P		E1	6.2-39(2)
F733	2	Drywell pressure instrument line solenoid isolation valve	2	A	I,P	L,P	RO	6.2-39(2)
F734	4	Drywell pressure instrument line for NBS valve	2	B	P		E1	6.2-39(2)

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

T31 Atmospheric Control System Valves (Continued)

No.	Qty	Description(b)(l)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F735	4	Drywell pressure instrument line for N2S solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F736	2	Wetwell pressure instrument line valve	2	B	P		E1	6.2-39(2)
F737	2	Wetwell pressure instrument line solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F738	4	Suppression pool water level reference leg instrument line valve	2	B	P		E1	6.2-39(2)
F739	4	Suppression pool water level reference leg instrument line solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F740	4	Suppression pool water level reference leg instrument line valve	2	B	P		E1	6.2-39(2)
F741	4	Suppression pool water level reference leg instrument line solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F742	2	Suppression pool water level reference leg instrument line valve	2	B	P		E1	6.2-39(2)
F743	2	Suppression pool water level reference leg instrument line solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F744	2	Suppression pool water level instrument line valve	2	B	P		E1	6.2-39(2)
F745	2	Suppression pool water level instrument line solenoid valve	2	A	L,P	L,P	RO	6.2-39(2)
F800	2	Drywell water level instrument line reference leg isolation valve	2	B	P		E1	6.2-39(2)
F801	2	Drywell water level instrument line reference leg solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F802	2	Drywell water level instrument line valve	2	B	P		E1	6.2-39(2)
F803	2	Drywell water level instrument line solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
F804	2	DW/WW differential pressure instrument line valve	2	B	P		E1	6.2-39(2)
F805	2	DW/WW diffrential pressure instrument solenoid isolation valve	2	A	L,P	L,P	RO	6.2-39(2)
D001	1	Wetwell overpressure rupture disk	2	L,D	P	Rplc.	5 yrs	6.2-39(1)
D002	1	Drywell overpressure rupture disk	2	L,D	P	Rplc.	5 yrs	6.2-39(1)

T49 Flammability Control System Valves

F001	2	Inlet line from drywell inboard isolation valve	2	A	L,A	L,P S	2 yrs 3 mo	6.2-40
F002	2	Inlet line from drywell outboard isolation valve	2	A	L,A	L,P S	2 yrs 3 mo	6.2-40

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

T49 Flammability Control System Valves

No.	Qty	Description(h)(l)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F003	2	Flow control valve for the FCS inlet line from drywell	3	B	A	P S	2 yrs 3 mo	6.2-40
F004	2	Blower bypass line flow control valve	3	B	A	P S	2 yrs 3 mo	6.2-40
F005	2	Blower discharge line to wetwell check valve	3	C	A	S	3 mo	6.2-40
F006	2	Discharge line to wetwell outboard isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-40
F007	2	Discharge line to wetwell inboard isolation valve	2	A	I,A	L,P S	2 yrs 3 mo	6.2-40
F008	2	Cooling water supply line from the RHR System MOV	3	B	A	P S	2 yrs 3 mo	6.2-40
F009	2	Cooling water supply line maintenance valve	3	B	P		E1	6.2-40
F010	2	Cooling water supply line admission MOV	3	B	A	P S	2 yrs 3 mo	6.2-40
F013	2	Inlet line from drywell drain line valve	3	B	P		E1	6.2-40
F014	2	Blower drain line valve	3	B	P		E1	6.2-40
F015	1	Blower discharge line to wetwell pressure relief valve	2	A,C	I,A	R L	5 yrs RO	6.2-40
F016	1	Blower discharge line to wetwell pressure relief line check valve (h3)	2	A,C	I,A	L,S	RO	6.2-40
F501	2	Inlet line from drywell test line valve	2	B	P		E1	6.2-40
F502	2	Discharge line to wetwell test line valve	2	B	P		E1	6.2-40
F504	2	Blower suction line test line valve	3	B	P		E1	6.2-40
F505	2	Blower discharge line test line valve	3	B	P		E1	6.2-40
F506	2	Drain line to Low Conductivity Waste (LCW) valve	3	B	P		E1	6.2-40
F507	2	Cooling water supply line test line valve	3	B	P		E1	6.2-40
F701	2	FE T49-FE002 upstream instrument line root valve	3	B	P		E1	6.2-40
F702	2	FE T49-FE002 downstream instrument line root valve	3	B	P		E1	6.2-40
F703	2	Blower suction line pressure instrument line root valve	3	B	P		E1	6.2-40
F704	2	FE T49-FE004 upstream instrument line root valve	3	B	P		E1	6.2-40
F705	2	FE T49-FE004 downstream instrument line root valve	3	B	P		E1	6.2-40

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

U41 Heating, Ventilating and Air Conditioning System Valves

No.	Qty	Description(h)(i)	Safety Class (a)	Code Cat. (c)	Valve Func. (d)	Test Para (e)	Test Freq. (f)	SSAR Fig. (g)
F001	2	Reactor area supply isolation valve	2	B	A	P	2 yrs	9.4-3(1)
						S	3 mo	
F002	2	Reactor area exhaust isolation valve	2	B	A	P	2 yrs	9.4-3(1)
						S	3 mo	
F003	2	Reactor bldg area divisional HVAC supply isolation valve	2	B	A	P	2 yrs	9.4-3(1)
						S	3 mo	
F004	2	Reactor bldg area divisional HVAC exhaust isolation valve	2	B	A	P	2 yrs	9.4-3(1)
						S	3 mo	
F007	4	MCR area HVAC bypass line isolation valve	2	B	A	P	2 yrs	9.4-3(1,2)
						S	3 mo	
F008	4	MCR area HVAC supply isolation valve	2	B	A	P	2 yrs	9.4-3(1,2)
						S	3 mo	
F009	4	MCR area HVAC emergency HVAC supply	2	B	A	P	2 yrs	9.4-1(1,2)
						S	3 mo	
F010	4	MCR area HVAC exhaust isolation valve	2	B	A	P	2 yrs	9.4-1(1,2)
						S	3 mo	

Y52 Oil Storage Transfer System Valves

F001	6	D/G transfer pump discharge line check vlv	3	C	A	S	3 mo	9.5-6
F002	3	D/G transfer pump discharge line relief vlv	3	C	A	R	5 yrs	9.5-6
F003	3	D/G transfer pump discharge line ball (plug) valve	3	B	P		E1	9.5-6
F004	3	D/G fuel oil day tank return to storage tank valve	3	B	P		E1	9.5-6
F501	3	D/G transfer pump discharge line drain vlv	3	B	P		E1	9.5-6
F502	3	D/G transfer pump discharge line vent vlv	3	B	P		E1	9.5-6

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

NOTES:

(a) 1, 2, or 3 - Safety Classification, SSAR Subsection 3.2.3.

(b) Pump test parameters per ASME OM Code 1990, Section ISTB:

- Pd - Discharge Pressure
- Pi - Inlet Pressure
- Q - Flow Rate
- Vd - Peak-to-peak vibration displacement
- Vv - Peak vibration velocity

(c) A, B, C or D - Valve category per ASME OM Code 1990, Subsection ISTC.

(d) Valve function:

- I - Primary containment isolation, SSAR Subsection 6.2.4
- A or P - Active or passive per ASME Code in (c) above (Paragraph ISTC 1.3)

(e) Valve test parameters per ASME Code in (c) above:

- L - Leakage rate (Paragraph ISTC 4.3, SSAR Table 6.2-7 for valves with function I in (d) above))
- P - Local position verification (Paragraph ISTC 4.1)
- R - Relief valve test including visual examination set pressure and seat tightness testing (Paragraph ISTC 4.4).
- S - Stroke exercise Category A or B (Paragraphs ISTC 4.2.1, 4.2.2)
  Category C (Paragraphs ISTC 4.5.1, 4.5.2, 4.5.4)
- X - Explosive charge test (Paragraph ISTC 4.6)

(f) Pump or valve test exclusions, alternatives and frequency per ASME Code in (b) or (c) above or Appendix I:

- CS - Cold shutdown
- RO - Refueling outage and/or no case greater than two years.
- E1 - Used for operating convenience, i.e., passive vent, drain, instrument, test, maintenance valves, or a system control valve. Test are not required (Paragraph ISTC 1.2).
- E2 - In regular use. Test frequency is not required provided the test parameters are analyzed and recorded at an operation interval not exceeding three months.
  Category A or B, Stroke (Paragraph ISTC 4.2.5).
  Category C, Stroke (Paragraph ISTC 4.5.3).
- E3 - Operability test every six months. Set pressure and leak test every refueling outage. (ASME OM Code 1990, Appendix I, I 1.3.7).
- E10 - In Regular use. Test frequency is not required provided the test parameters are recorded at least once every three months of operation (Paragraph ISTB 5.3).
- E11 - Lacking required fluid inventory. Test shall be performed at least once every two years with required fluid inventory provided (Paragraph ISTB 5.5).

Table 3.9-8 (Continued)

INSERVICE TESTING SAFETY-RELATED PUMPS AND VALVES

NOTES (Continued):

(g) Piping and instrument symbols and abbreviations are defined in Figure 1.7-1. Figure page numbers are shown in parenthesis ().

(h) Reasons for code defined testing exceptions (Paragraphs ISTC 4.2.2, 4.5.2):

(h1) Inaccessible inerted containment and/or steam tunnel radiation during power operations.

(h2) Avoids valve damage and impacts on power operations.

(h3) Avoids impacts on power operations.

(h4) A temporary crosstie is necessary to carry the ongoing cooling loads.

(h5) Avoids cold/hot water injection to RPV during power operations.

(h6) Maintain pressure isolation during normal operation.

(h7) Inventory available only during refueling outage.

(h8) RHR backup to FPC is exercised at refueling outage.

(i) Summary justification for code exemption request (Paragraph ISTB 5.2, ISTC 6.2).

(i1) Positive displacement pump - PI not significant.

(i2) The piping is maintained full by a small fraction of the pump's flow capacity.

(i3) Accessible with the two RIP motor replacements at every RO.