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TABLE 3.7-1

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves		Maximum Operating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
		Inside	Outside			
1	Main steam line (B21-F022 A,B,C,D; B21-F028 A,B,C,D)	4	4	3<T<5	O	GC
1	Main steam line drain (B21-F016, B21-F019)	1	1	15	C	SC
1	Reactor water sample line (B31-F019, B31-F020)	1	1	5	O	GC
2	Drywell purge inlet (T48-F307, T48-F308)		2	5	C	SC
2	Drywell main exhaust (T48-F319, T48-F320)		2	5	C	SC
2	Drywell exhaust valve bypass to standby gas treatment (T48-F341, T48-F340)		2	5	C	SC
2	Drywell nitrogen make-up line (normal operation) (T48-F118A)		1	5	C	SC
2	Suppression chamber purge inlet (T48-F309, T48-F324)		2	5	C	SC
2	Suppression chamber main exhaust (T48-F318, T48-F326)		2	5	C	SC

TABLE 3.7-1 (Cont'd)

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves		Maximum Ope.ating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
		Inside	Outside			
2	H_2-O_2 Analyzer A Torus Sample Line (P33-F006, P33-F014)	0	2	5	C	SC
2	H_2-O_2 Analyzer A Drywell Sample Line (P33-F002, P33-F010)	0	2	5	O	GC
2	H_2-O_2 Analyzer A Return Line (P33-F004, P33-F012)	0	2	5	O	GC
2	H_2-O_2 Analyzer B Torus Sample Line (P33-F007, P33-F015)	0	2	5	O	GC
2	H_2-O_2 Analyzer B Drywell Sample Line (P33-F003, P33-F011)	0	2	5	C	SC
2	H_2-O_2 Analyzer B Return Line (P33-F005, P33-F013)	0	2	5	O	GC
2	Fission Products Monitor Sample Line (D11-F051, D11-F053)	0	2	5	O	GC
2	Fission Products Monitor Return Line (D11-F050, D11-F052)	0	2	5	O	GC

TABLE 3.7-1 (Cont'd)

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves Inside	Number of Power Operated Valves Outside	Maximum Operating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
2	Suppression chamber exhaust valve bypass to standby gas treatment (T48-F339, T48-F338)	2		5	C	SC
2	Suppression chamber nitrogen make-up line (normal operation) (T48-F118B)	1		5	C	SC
2	Drywell and suppression chamber nitrogen supply line (inerting) (T48-F103)	1		5	C	SC
2	Drywell and suppression chamber nitrogen make-up line (normal operation) (T48-F104)	1		5	C	SC
2	Drywell equipment drain sump discharge (G11-F019, G11-F020)	2		15	O	GC
2	Drywell floor drain sump discharge (G11-F003, G11-F004)	2		15	O	GC
2	TIP Guide Tube (C51-J004)	1 each line		NA	C	SC
(c)	Drywell pneumatic system (P70-F002, P70-F003)	2		5	O	GC

TABLE 3.7-1 (Cont'd)

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves		Maximum Operating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
		Inside	Outside			
6	RHR reactor shutdown cooling suction (supply) (E11-F008, E11-F009)	1	1	24	C	SC
6	RHR reactor head spray (E11-F022, E11-F023)	1	1	20/12	C	SC
3	HPCI - turbine steam (E41-F002, E41-F003)	1	1	50	O	GC
4	RCIC - turbine steam (E51-F007, E51-F008)	1	1	20	O	GC
5	Reactor water cleanup from recirculation loop (G31-F001, G31-F004)	1	1	30	O	GC
2	Post-accident sampling system supply (B21-F111, B21-F112)		2	5	C	SC
2	Post-accident sampling system return (E41-F122, E41-F121)		2	5	C	SC
2	Core spray test line to suppression pool (E21-F015A,B)		1 each line	50	C	SC

TABLE 3.7-1 (Cont'd)

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves Inside	Number of Power Operated Valves Outside	Maximum Operating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
2	HPCI turbine exhaust vacuum breaker (E41-F111, E41-F104)		2	16	O	GC
2	RCIC turbine exhaust vacuum breaker (E51-F105, E51-F104)		2	16	O	GC
2	Torus drainage and purification suction (G51-F011, G51-F012)		2	12	C	SC
2	RHR drywell spray (E11-F016A,B)		1 each line	11	C	SC
2	RHR test line to the suppression pool (E11-F024A,B; E11-F028A,B)		2 each line	110/26	C	SC
2	RHR to torus spray header (E11-F027A,B; E11-F028A,B)		2 each line	10/26	C	SC
2	RHR heat exchanger to the suppression pool (E11-F011A,B; E11-F026A,B)		2 each line	22	C	SC

TABLE 3.7-1 (Cont'd)

PRIMARY CONTAINMENT ISOLATION VALVES WHICH
RECEIVE A PRIMARY CONTAINMENT ISOLATION SIGNAL

Isolation Group (b)	Valve Identification (d)	Number of Power Operated Valves		Maximum Operating Time (sec)	Normal Position (a)	Action on Initiating Signal (a)
		Inside	Outside			
2	RHR discharge to radwaste (E11-F049, E11-F040)		2	20/32	C	SC
2	Torus ventilation exhaust (T48-F332A,B; T48-F333A,B)	2	2	5	C	SC
2	Drywell ventilation exhaust (T48-F334A,B; T48-F335A,B)	2	2	5	C	SC
3	HPCI pump minimum flow (E41-F012)		1	11	C	SC
3	HPCI pump suction (E41-F042)		1	84	C	SC
4	RCIC pump minimum flow (E51-F019)		1	11	C	SC
4	RCIC pump suction (E51-F031)		1	33	C	SC

Table 3.7-1

Primary Containment Isolation Valves Which
Receive a Primary Containment Isolation Valve Signal

These notes refer to the lower case letters in parentheses on the previous page.

NOTES:

a. Key: O = Open SC = Stays closed
C = Closed GC = Goes closed

b. Isolation Groupings are as follows:

GROUP 1: The valves in Group 1 are actuated by any one of the following conditions:

1. Reactor vessel water level Low Low Low (Level 1)
2. Main steam line radiation high
3. Main steam line flow high
4. Main steam line tunnel temperature high
5. Main steam line pressure low
6. Condenser vacuum low
7. Turbine building temperature at the steam lines high

GROUP 2: The valves in group 2 are actuated by any one of the following conditions:

1. Reactor vessel water level low (Level 3)
2. Drywell pressure high

GROUP 3: Isolation valves in the high pressure coolant injection (HPCI) system are actuated by any one of the following conditions:

1. HPCI steam line flow high
2. High temperature in the vicinity of the HPCI steam line
3. HPCI steam supply pressure low
4. HPCI turbine exhaust diaphragm pressure
5. Torus room differential temperature high

GROUP 4: Primary Containment Isolation valves in the reactor core isolation cooling (RCIC) system are actuated by any one of the following conditions:

1. RCIC steam line flow high
2. High temperature in the vicinity of the RCIC steam line
3. RCIC steam line pressure low
4. RCIC turbine exhaust diaphragm pressure high
5. Torus room differential temperature high

Table 3.7-1
(Concluded)

Primary Containment Isolation Valves Which
Receive a Primary Containment Isolation Valve Signal

GROUP 5: The valves in Group 5 are actuated by any one of the following conditions:

1. Reactor vessel water level Low Low (Level 2)
2. Reactor water cleanup equipment room temperature high
3. Reactor water cleanup equipment room ventilation differential temperature high
4. Reactor water cleanup system differential flow high
5. Actuation of Standby Liquid Control System - closes outside valve only
6. High temperature following non-regenerative heat exchanger - closes outside valve only

GROUP 6: The valves in Group 6 are actuated by any one of the following conditions:

1. Reactor vessel water level low (Level 3)
2. Reactor vessel steam dome pressure low permissive

c. Requires a Group 2 signal or a Reactor Building ventilation high radiation isolation signal.

d. For redundant lines, only one set of valves is listed. Other sets are identical except for valve numbers, which are included. Valve numbers are listed in order from within primary containment outward for each line.

Table 3.7-4

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-7A	B21-F022A & F028A Main Steam Isolation Valves	(1) (2) (3) (5) (9)
X-7B	B21-F022B & F028B Main Steam Isolation Valves	(1) (2) (3) (5) (9)
X-7C	B21-F022C & F028C Main Steam Isolation Valves	(1) (2) (3) (5) (9)
X-7D	B21-F022D & F028D Main Steam Isolation Valves	(1) (2) (3) (5) (9)
X-8	B21-F016 & F019	(1) (2) (4) (5) (9)
X-9A	B21-F010B	(1) (2) (3) (5) (10)
X-9A	B21-F032B	(1) (2) (3) (5) (10)
X-9A	E41-F006	(1) (2) (4) (5) (9)
X-9A	G31-F203	(1) (2) (4) (5) (10)
X-9B	B21-F010A	(1) (2) (3) (5) (10)
X-9B	B21-F032A	(1) (2) (3) (5) (10)
X-9B	E51-F013	(1) (2) (4) (5) (9)
X-9B	G31-F039	(1) (2) (4) (5) (10)
X-10	E51-F007, F008	(1) (2) (4) (5) (9)
X-11	E41-F002 & F003	(1) (2) (4) (5) (9)
X-12	E11-F008 & F009	(1) (2) (4) (5) (9)
X-13A	E11-F015A	(1) (2) (4) (5) (9)
X-13B	E11-F015B	(1) (2) (4) (5) (9)
X-14	G31-F001 & F004	(1) (2) (4) (5) (9)
X-16A	E21-F005A	(1) (2) (4) (5) (9)
X-16B	E21-F005B	(1) (2) (4) (5) (9)
X-17	E11-F022 & F023	(1) (2) (4) (5) (9)

Table 3.7-4
(Continued)

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-18	G11-F019 & F020	(1) (2) (4) (5) (9)
X-19	G11-F003 & F004	(1) (2) (4) (5) (9)
X-20	P41-F049 & F050	(1) (2) (4) (5) (9)
X-21	P51-F513 & F514	(1) (2) (4) (5) (9)
X-22	P70-F004, F005	(1) (2) (4) (5) (10)
X-23	P42-F051	(1) (2) (4) (5) (10)
X-24	P42-F052	(1) (2) (4) (5) (10)
X-25	T48-F307, F308, F309, F103 & F324	(1) (2) (4) (5) (9)
X-25	T48-F113	(1) (2) (4) (5) (14)
X-25	T48-F321	(1) (2) (4) (5) (14)
X-25	T48-F104	(1) (2) (4) (5) (14)
X-25	T48-F114, F118A, F118B & F322	(1) (2) (4) (5) (10)
X-26	T48-F319 & F320	(1) (2) (4) (5) (9)
X-26	T48-F334A	(1) (2) (4) (5) (14)
X-26	T48-F334B	(1) (2) (4) (5) (14)
X-26	T48-F335A & F335B	(1) (2) (4) (5) (10)
X-26	T48-F340 & F341	(1) (2) (4) (5) (9)
X-26	P33-F002	(1) (2) (4) (5) (10)
X-26	P33-F010	(1) (2) (4) (5) (14)
X-27A	D11-F051 & F053	(1) (2) (4) (5) (10)
X-27F	P70-F066 & F067	(1) (2) (4) (5) (10)

Table 3.7-4
(Continued)

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-28F	P33-F003 & F011	(1) (2) (4) (5) (9)
X-28A	B31-F019 & F020	(1) (2) (4) (5) (9)
X-31D	P33-F004 & F012	(1) (2) (4) (5) (9)
X-31F	B31-F013A & F017A	(1) (2) (4) (5) (10)
X-33C	D11-F050 & F052	(1) (2) (4) (5) (10)
X-34E	P33-F005 & F013	(1) (2) (4) (5) (9)
X-35A	C51-Ball Valve	(1) (2) (4) (5) (10)
X-35B	C51-Ball Valve	(1) (2) (4) (5) (10)
X-35C	C51-Ball Valve	(1) (2) (4) (5) (10)
X-35D	C51-Ball Valve	(1) (2) (4) (5) (10)
X-35E	C51-Nitrogen Inerting	(1) (2) (4) (5) (10)
X-39A	E11-F016A	(1) (2) (4) (5) (9)
X-39B	E11-F016B	(1) (2) (4) (5) (9)
X-40C	P70-F002 & F003	(1) (2) (4) (5) (9)
X-42	C41-F006	(1) (2) (4) (5) (10)
X-42	C41-F007	(1) (2) (4) (5) (10)
X-45F	T23-F004 & F005	(1) (2) (4) (5) (9)
X-46	P21-F353 & F420	(1) (2) (4) (5) (9)
X-52B	B21-F111 & F112	(1) (2) (4) (5) (10) (11)
X-59A	B31-F013B & F017B	(1) (2) (4) (5) (10)
X-203	E51-F003 & F031	(1) (2) (4) (5) (9)

Table 3.7-4
(Continued)

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-204A	E11-F004A	(1) (2) (5) (9) (12)
X-204A	E11-F030A	(1) (2) (4) (5) (11)
X-204B	E11-F004B	(1) (2) (5) (9) (12)
X-204B	E11-F030B	(1) (2) (4) (5) (11)
X-204C	E11-F004C	(1) (2) (5) (9) (12)
X-204C	E11-F030C	(1) (2) (4) (5) (11)
X-204D	E11-F004D	(1) (2) (5) (9) (12)
X-204D	E11-F030D	(1) (2) (4) (5) (11)
X-205	T48-F310 & F328A	(1) (2) (4) (5) (9)
X-205	T48-F115 & F116	(1) (2) (4) (5) (9)
X-205	T48-F311 & F328B	(1) (2) (4) (5) (9)
X-205	T48-F325 & F327	(1) (2) (4) (5) (9)
X-206A	E41-F121 & F122	(1) (2) (4) (5) (9)
X-207	E41-F042 & F051	(1) (2) (4) (5) (9)
X-208A	E21-F001A	(1) (2) (4) (5) (9)
X-208B	E21-F001B	(1) (2) (4) (5) (9)
X-210A	E11-F007A	(1) (2) (4) (5) (11)
X-210A	E21-F044A	(1) (2) (4) (5) (11)
X-210A	E51-F019 & F021	(1) (2) (4) (5) (9)
X-210A	E21-F031A	(1) (2) (4) (5) (11)
X-210A	E11-F024A, F027A & F028A	(1) (2) (4) (5) (9)

Table 3.7-4
(Continued)

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-210A	E11-F011A & F026A	(1) (2) (4) (5) (9)
X-210A	E11-F025A, F029, F055A, F103A	(1) (2) (4) (5) (11)
X-210A	E21-F015A	(1) (2) (4) (5) (11)
X-210A	E11-Thermal Relief Valve	(1) (2) (4) (5) (11)
X-210B	E11-F007B	(1) (2) (4) (5) (11)
X-210B	E21-F044B	(1) (2) (4) (5) (11)
X-210B	E11-F097	(1) (2) (4) (5) (11)
X-210B	E41-F012 & F046	(1) (2) (4) (5) (9)
X-210B	E21-F031B	(1) (2) (4) (5) (11)
X-210B	E11-F024B, F027B & F028B	(1) (2) (4) (5) (9)
X-210B	E11-F011B & F026B	(1) (2) (4) (5) (9)
X-210B	E11-F025B, F055B, F103B	(1) (2) (4) (5) (11)
X-210B	E21-F015B	(1) (2) (4) (5) (11)
X-210B	E11-Thermal Relief Valve	(1) (2) (4) (5) (11)
X-212	E51-F001 & F040	(1) (2) (4) (5) (9)
X-213	E51-F002 & F028	(1) (2) (4) (5) (9)
X-214	E41-F021 & F049	(1) (2) (4) (5) (9)
X-215	E41-F022 & F040	(1) (2) (4) (5) (9)
X-217	P33-F007 & F015	(1) (2) (4) (5) (9)
X-218A	G51-F002	(1) (2) (4) (5) (10)
X-218A	G51-D001	(1) (2) (4) (5) (13)

Table 3.7-4
(Continued)

Primary Containment Testable Isolation Valves

Penetration Number	Valve Designation	Notes
X-218A	G51-F011	(1) (2) (4) (5) (10)
X-218A	G51-F012	(1) (2) (4) (5) (10)
X-220	P33-F006	(1) (2) (4) (5) (14)
X-220	P33-F014	(1) (2) (4) (5) (10)
X-220	T48-F318 & F326	(1) (2) (4) (5) (9)
X-220	T48-F332A	(1) (2) (4) (5) (14)
X-220	T48-F332B	(1) (2) (4) (5) (14)
X-220	T48-F333A & F333B	(1) (2) (4) (5) (10)
X-220	T48-F338 & F339	(1) (2) (4) (5) (9)
X-221C	E51-F104 & F105	(1) (2) (4) (5) (9)
X-222A	E41-F111 & F104	(1) (2) (4) (5) (9)
X-223A	T48-Air Cylinder	(1) (2) (4) (5) (11)
X-223A	T48-F342G-L	(1) (2) (4) (5) (11)
X-223B	T48-Air Cylinder	(1) (2) (4) (5) (11)
X-223B	T48-F342A-F	(1) (2) (4) (5) (11)

Notes for Tables 3.7-2 through 3.7-4

(1) Test duration for all valves and penetrations listed will generally exceed one hour.

(2) Test pressures are at least 59 psig for all valves and penetrations except MSIV's which are tested at 28 psig.

(3) MSIV acceptable leakage limit is 11.5 scfh/valve of air.

(4) The total acceptable leakage for all valves and penetrations other than the MSIV's is 0.6 L_a.

(5) Local leak tests on all testable isolation valves shall be performed each major refueling shutdown but in no case at intervals greater than 2 years.

(6) Local leak tests on all testable penetrations shall be performed each major refueling shutdown but in no case at intervals greater than 2 years.

(7) The personnel air lock shall be tested at intervals not to exceed 6 months.

(8) The personnel air lock door seals are tested at 10 psig after each opening.

(9) Identifies isolation valves that are tested by applying pressure between the inboard and outboard isolation valves. Inboard valve is not tested in the direction required for isolation but will have equivalent or more conservative leakage results.

(10) Identifies isolation valves that are tested by applying pressure between the isolation valve and a manually operated valve such that the isolation valve is tested in the direction required for isolation.

(11) Identifies isolation valves that are tested by applying pressure between the isolation valves and other system valves. Isolation valves not tested in the direction required for isolation will have equivalent or more conservative results.

(12) The RHR system remains water filled post-LOCA. Isolation valves are tested with water.

(13) Identified blind flange that is tested by applying pressure between the flange and a manually operated valve such that the flange is tested in the direction required for isolation.

(14) Identifies isolation valves that are tested by applying pressure between the inboard and outboard isolation valves.