

→ (DRN 02-912)

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT LEAKAGE

← (DRN 02-912)

The Containment Leakage Paths identified on Table 3.6-1 are the Secondary Containment Bypass Leakage paths applicable to Technical Specification 3.6.1.2.

TABLE 3.6-1

CONTAINMENT LEAKAGE PATHS

<u>PENETRATION NO</u>	<u>SYSTEM NAME</u>	<u>VALVE TAG NO.</u>	<u>TEST TYPE</u>
7	Demineralized Water	PMUMVAAA151 PMUMVAAA152	Bypass/Type C
8	Station Air	SA MVAAA908 SA MVAAA909 SA ISV9082 SA MVAAA9085	Bypass/Type C
9	Instrument Air	IA MVAAA909 IA MVAAA910	Bypass/Type C
10	Containment Atmospheric Purge	CAPMVAAA103 CAPMVAAA104	Type C
11	Containment Atmospheric Purge	CAPMVAAA204 CAPMVAAA203	Type C
12	Containment Vacuum Relief	CVRMVAAA101 CVRMVAAA102	Type C
13	Containment Vacuum Relief	CVRMVAAA201 CVRMVAAA202	Type C
14	Nitrogen Gas	NG MVAAA157 NG MVAAA158	Bypass/Type C
23	Component Cooling Water	CC MVAAA641 CC MVAAA644	Bypass/Type C
24	Component Cooling Water	CC MVAAA713 CC MVAAA710 CCMVAAA7102	Bypass/Type C Type C

TABLE 3.6-1 (Continued)

CONTAINMENT LEAKAGE PATHS

<u>PENETRATION NO.</u>	<u>SYSTEM NAME</u>	<u>VALVE TAG NO.</u>	<u>TEST TYPE</u>
25	Fuel Transfer Containment & Fuel Handling Building	Blind Flange	Bypass/Type B
26	Chemical & Volume Control Letdown Line	CVCMVAAA109 CVCMVAAA103 CVCMVAAA1081	Bypass/Type C Type C
28	Sampling Line from Reactor Coolant Line	PSLMVAAA107 PSLMVAAA105	Bypass/Type C
29	Sampling Line from Pressurizer Surge Line	PSLMVAAA204 PSLMVAAA203	Bypass/Type C
30	Sampling Line from Pressurizer Steam Space	PSLMVAAA304 PSLMVAAA303	Bypass/Type C
31	Waste Management from Containment Vent Header	GWMVAAA105 GWMVAAA104	Bypass/Type C
40	SDC Suction from RCS	SI MVAAA405B & SI MVAAA4052B SI MVAAA406B SI MVAAA407B	Bypass/Type C Bypass/Type C Bypass/Type C
41	SDC Suction from RCS	SI MVAAA405A & SI MVAAA4052A SI MVAAA406A SI MVAAA407A	Bypass/Type C Bypass/Type C Bypass/Type C
42	Containment Sump Pump Discharge/Post Accident Sample Return	SP MVAAA106 SP MVAAA105 SP MVAAA1051	Bypass/Type C Type C
43	Boron Management Reactor Drain Tank Outlet	BM MVAAA110 BM MVAAA109 BM MVAAA1091	Bypass/Type C Type C
← (DRN 02-0736, Am. 55)	Controlled Bleedoff	RC MVAAA6061	Type C

TABLE 3.6-1 (Continued)

CONTAINMENT LEAKAGE PATHS

<u>PENETRATION NO</u>	<u>SYSTEM NAME</u>	<u>VALVE TAG NO.</u>	<u>TEST TYPE</u>
45	CARS Makeup to Containment	CARMVAAA101B CARMVAAA102B	Bypass/Type C
46	CARS Makeup to Containment	CARMVAAA101A CARMVAAA102A	Bypass/Type C
47	CARS Exhaust from Containment Containment Pressure Exhaust	CARMVAAA202B CARMVAAA201B CARMVAAA200B	Bypass/Type C
48	CARS Exhaust from Containment	CARMVAAA202A CARMVAAA201A	Bypass/Type C
49	Containment Atmosphere Monitoring Inlet and Outlet	ARMISV0110 ARMISV0109 ARMVAAA104 ARMISV0103	Type C
51	Refueling Cavity Purification Inlet	FS MVAAA405 FS MVAAA406	Bypass/Type C
53	CVR Non Essential Monitoring Line	CVRISV0400 CVRISV0401	Type C
	Containment Leakage Rate Test Connection	LRTMVA00400	Type C
	CVR Essential Instrument Line	The CVR Essential line will be leak tested from inside containment to its termination point in the instrument cabinet.	Bypass/Type C
→ (DRN 02-0736) 59	Safety Injection System from SI Tank to Refueling Water Storage Pool	SI MVAAA344 SI MVAAA343 SI MVAAA343A	Bypass/Type C Type C
← (DRN 02-0736) 60	Fire Protection System to Reactor Building	FP MVAAA601A FP MVAAA602A	Bypass/Type C
61	Fire Protection System to Reactor Building	FP MVAAA601B FP MVAAA602B	Bypass/Type C

TABLE 3.6-1 (Continued)

CONTAINMENT LEAKAGE PATHS

<u>PENETRATION NO.</u>	<u>SYSTEM NAME</u>	<u>VALVE TAG NO.</u>	<u>TEST TYPE</u>
62	Water from Refueling Cavity to RWSP	FS MVAAA416 FS MVAAA415	Bypass/Type C
63	Containment Leakage Rate Test Connection	LRTMVAAA109 Blind Flange	Bypass/Type C
65	Containment Leakage Rate Test Connection and	LRTMVAAA202 LRTMVAAA204	Type C
66	CVR Essential Instrument Line Hydrogen Analyzer Supply and Return	The CVR Essential line will be leak tested from inside containment to its termination point in the instrument cabinet HRAISV0110A HRAISV0109A HRAISV0126A HRAMVAAA128A	Bypass/Type C Type C
67	Hydrogen Analyzer Supply and Return	HRAISV0110B HRAISV0109B HRAISV0126B HRAMVAAA128B	Type C
71	Demineralized Water	CMUMVAAA244 CMUMVAAA245	Bypass/Type C
Escape Lock	NA		Bypass/Type B
Personnel Lock	NA		Type B
Electrical	NA		Type B
Penetrations	NA		Type B
Equipment Hatch	NA		Type B
Expansion Bellows	Various		Type B
1,2,3,4,25,32,33,43			

→(DRN 04-1244, Am. 99)

←(DRN 04-1244, Am. 99)

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→ (DRN 02-912)
CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

← (DRN 02-912)

The Containment Isolation Valves listed on Table 3.6-2 are the valves that are applicable to Technical Specification 3.6.3.

TABLE 3.6-2
CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾																	
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP							
ARM ISV0103	Containment Atmosphere Monitor	49	X																	
ARM ISV0109	Containment Atmosphere Monitor	49	X																	
ARM ISV0110	Containment Atmosphere Monitor	49	X																	
ARM MVA00104	Containment Atmosphere Monitor	49				X														
→(DRN 05-39, Am. 98.; 05-1070, Am. 104)																				
BD MVA00102A	Steam Generator Blowdown	5	X ⁽⁹⁾											X ⁽⁹⁾						
BD MVA00102B	Steam Generator Blowdown	6	X ⁽⁹⁾											X ⁽⁹⁾						
←(DRN 05-39, Am. 98.; 05-1070, Am. 104)																				
BD MVA00103A	Steam Generator Blowdown	5	X											X						
BD MVA00103B	Steam Generator Blowdown	6	X											X						
→(DRN 02-0736)																				
BM MVA00109	Reactor Drain Tank Outlet	43	X																	
BM MVA00110	Reactor Drain Tank Outlet	43	X																	
BM MVA001091	Relief Valve ⁽⁶⁾	43																		
←(DRN 02-0736)																				
→(DRN 05-998, Am. 101)																				
CAP MVA00103	Containment Purge Inlet	10	X	X																X
←(DRN 05-998, Am. 101)																				
CAP MVA001032	Penetration #10 Leak Rate Test Connection	10			X															
CAP MVA00104	Containment Purge Inlet	10	X	X																X
CAP MVA00203	Containment Purge Outlet	11	X	X																X
CAP MVA002032	Penetration #11 Leak Rate Test Connection	11			X															
CAP MVA00204	Containment Purge Outlet	11	X	X																X
CAR MVA00101A	CARS Makeup	46																		X
CAR MVA00101B	CARS Makeup	45			X															X

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾														
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP				
CAR MVA00102A	CARS Makeup	46				X											
→(DRN 05-1070, Am. 104)																	
CAR MVA00102B	CARS Makeup	45				X											
←(DRN 05-1070, Am. 104)																	
CAR MVA00200B	Containment Pressure Exhaust	47	X	X													
CAR MVA00201A	CARS Exhaust	48	X														
CAR MVA00201B	CARS Exhaust	47	X														
CAR MVA00202A	CARS Exhaust	48			X												
CAR MVA00202B	CARS Exhaust	47	X	X													
CC MVA00641	CCW to RCPs and CEDM Cooler	23			X							X ⁽⁵⁾					
CC MVA00644	CCW to RCPs and CEDM Cooler	23				X											
CC MVA00710	CCW from RCPs and CEDM Cooler	24			X							X ⁽⁵⁾					
CC MVA007102	Relief Valve ⁽⁶⁾	24															
CC MVA00713	CCW from RCPs and CEDM Cooler	24			X												
CC MVA00807A	CCW to Containment Fan Cooler Units	18			X ⁽⁴⁾									X (open)			
CC MVA00807B	CCW to Containment Fan Cooler Units	15			X ⁽⁴⁾									X (open)			
CC MVA00808A	CCW to Containment Fan Cooler Units	20			X ⁽⁴⁾									X (open)			
CC MVA00808B	CCW to Containment Fan Cooler Units	21			X ⁽⁴⁾									X (open)			
CC MVA00822A	CCW from Containment Fan Cooler Units	19			X ⁽⁴⁾									X (open)			
CC MVA00822B	CCW from Containment Fan Cooler Units	22			X ⁽⁴⁾									X (open)			
CC MVA00823A	CCW from Containment Fan Cooler Units	17			X ⁽⁴⁾									X (open)			

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾													
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP			
CC MVA823B	CCW from Containment Fan Cooler Units	16			X ⁽⁴⁾			X (open)								
CMU MVA244	Deminerlizer Water	71			X											
CMU MVA245	Deminerlized Water	71					X									
CS ISV129A	Containment Spray	34A & B			X											
CS ISV129B	Containment Spray	35A & B			X											
CS MVA125A	Containment Spray	34A & B			X ⁽⁴⁾						X (open)					
CS MVA125B	Containment Spray	35A & B			X ⁽⁴⁾						X (open)					
CS MVA128A	Containment Spray	34A & B					X									
CS MVA128B	Containment Spray	35A & B					X									
CVC ISV0216A	CVCS Auxiliary Spray	27			X											
CVC ISV0216B	CVCS Auxiliary Spray	27			X											
CVC ISV0218A	CVCS Charging Line	27			X ⁽⁴⁾											
CVC ISV0218B	CVCS Charging Line	27			X ⁽⁴⁾											
CVC MVA103	CVCS Letdown	26					X									
CVC MVA1081	Relief Valve ⁽⁶⁾	26														
CVC MVA109	CVCS Letdown	26					X									
CVC MVA209	CVCS Charging Line	27			X ⁽⁴⁾											
CVC MVA219	CVCS Charging Line (relief function)	27					X									
CVC MVA401	RCP Bleedoff	44														
CVR ISV0400	Containment Vacuum Relief Instrument Line	53	X													

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾														
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP				
CVR ISV0401	Containment Vacuum Relief Instrument Line	53	X														
CVR MVA00101	Vacuum Relief	12			X										X (open)		
CVR MVA00102	Vacuum Relief	12				X											
CVR MVA00201	Vacuum Relief	13			X										X (open)		
CVR MVA00202	Vacuum Relief	13				X											
CVR MVA00301A	CVR Essential Instrument Line	53			X												
CVR MVA00301B	CVR Essential Instrument Line	65			X												
CVR MVA00302A	Containment Vacuum Relief Essential Instrument Line Excess Flow	53				X											
CVR MVA00302B	Containment Vacuum Relief Essential Instrument Line Excess Flow	65				X											
EFW MVA00228A	Emergency Feedwater	3								X ⁽²⁾ (close)			X (open)				
EFW MVA00228B	Emergency Feedwater	4								X ⁽²⁾ (close)			X (open)				
EFW MVA00229A	Emergency Feedwater	3								X ⁽²⁾ (close)			X (open)				
EFW MVA00229B	Emergency Feedwater	4								X ⁽²⁾ (close)			X (open)				
FP MVA00601A	Containment Fire Water Header	60	X														
FP MVA00601B	Containment Fire Water Header	61	X														
FP MVA00602A	Containment Fire Water Header	60					X										

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾																	
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP							
FP MVA00602B	Containment Fire Water Header	61				X														
FS MVA00405	Refueling Cavity Purification Inlet	51				X														
FS MVA00406	Refueling Cavity Purification Inlet	51				X														
FS MVA00415	Refueling Cavity Drain	62				X														
FS MVA00416	Refueling Cavity Drain	62				X														
GWM MVA00104	Waste Gas Vent Header	31	X																	
GWM MVA00105	Waste Gas Vent Header	31	X																	
HRA ISV0109A	Hydrogen Analyzer	66	X ⁽³⁾			X ⁽⁸⁾														
HRA ISV0109B	Hydrogen Analyzer	67	X ⁽³⁾			X ⁽⁸⁾														
HRA ISV0110A	Hydrogen Analyzer	66	X ⁽³⁾			X ⁽⁸⁾														
HRA ISV0110B	Hydrogen Analyzer	67	X ⁽³⁾			X ⁽⁸⁾														
HRA ISV0126A	Hydrogen Analyzer	66	X ⁽³⁾			X ⁽⁸⁾														
HRA ISV0126B	Hydrogen Analyzer	67	X ⁽³⁾			X ⁽⁸⁾														
HRA MVA00128A	Hydrogen Analyzer	66					X													
HRA MVA00128B	Hydrogen Analyzer	67					X													
IA MVA00909	Instrument Air	9	X																	
IA MVA00910	Instrument Air	9					X													

→(DRN 05-880, Am.100)

←(DRN 05-880, Am. 100)

TABLE 3.6-2
CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾															
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP					
LRT MVA00109	ILRT Connection	63			X													
LRT MVA00110	ILRT Connection	63			X													
LRT MVA00201	ILRT Test Connection	65			X													
LRT MVA002011	ILRT Test Connection	65			X													
LRT MVA00202	ILRT Test Connection	65			X													
LRT MVA00203	ILRT Test Connection	65			X													
LRT MVA002031	ILRT Test Connection	65			X													
LRT MVA00204	ILRT Test Connection	65			X													
LRT MVA00400	LLRT Test Connection	53			X													
→(DRN 04-1244, Am. 99)																		
←(DRN 04-1244, Am. 99)																		
MS MVA00119A	Main Steam Drain	1	X															
MS MVA00119B	Main Steam Drain	2	X															
MS MVA00120A	Main Steam Drain	1	X															
MS MVA00120B	Main Steam Drain	2	X															
MS MVA001244A	MSIV Bypass	1			X													
MS MVA001244B	MSIV Bypass	2			X													
→(DRN 03-1738, Am. 81)																		
←(DRN 03-1738, Am. 81)																		
MS MVA00401A	Steam to Emergency Steam Generator Feed Pump Turbine	1			X ⁽⁴⁾											X (open)		
MS MVA00401B	Steam to Emergency Steam Generator Feed Pump Turbine	2			X ⁽⁴⁾											X (open)		

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾																	
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP							
NG MVA4157	Nitrogen Supply	14	X																	
NG MVA4158	Containment N2 Supply	14				X														
NG MVA412A	Main Steam N2 Blanket	1			X															
NG MVA412B	Main Steam N2 Blanket	2			X															
PMU MVA151	Deminerlizer Water	7			X															
PMU MVA152	Deminerlized Water	7				X														
PSL MVA105	RCS Sample	28	X																	
PSL MVA107	RCS Sample	28	X																	
PSL MVA203	Pressurizer Surge Line Sample	29	X																	
PSL MVA204	Pressurizer Surge Line Sample	29	X																	
PSL MVA303	Pressurizer Steam Space Sample	30	X																	
PSL MVA304	Pressurizer Steam Space Sample	30	X																	
RC MVA606	RCP Bleedoff	44	X																	
RC MVA6061	Relief Valve ⁽⁶⁾	44																		
SA ISV9082	Station Air / Instrument Air	8			X															
SA MVA908	Station Air	8			X															
SA MVA9085	Station Air / Instrument Air	8				X														
SA MVA909	Station Air	8			X															

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

VALVE NUMBER	FUNCTION	Penetration Number	ACTUATION SIGNALS ⁽¹⁾													
			CIAS	CPIS	Manual / Remote Manual	Check Valve	SIAS	MSIS	CSAS	EFAS	RAS	HDP	CADP			
SI MVA138A	SI from LPSI Pump A to Loop 2B	39			X ⁽⁴⁾		X (open)									
SI MVA138B	SI from LPSI Pump B to Loop 1B	37			X ⁽⁴⁾		X (open)									
SI MVA139A	SI from LPSI Pump A to Loop 2A	38			X ⁽⁴⁾		X (open)									
SI MVA139B	SI from LPSI Pump B to Loop 1A	36			X ⁽⁴⁾		X (open)									
→ (DRN 02-1405) SI MVA14023A ← (DRN 02-1405)	SI from LPSI Pump A to Loop 2B	39	X		X											
SI MVA142A	SI from LPSI Pump A to Loop 2B	39				X										
SI MVA142B	SI from LPSI Pump B to Loop 1B	37				X										
SI MVA143A	SI from LPSI Pump A to Loop 2A	38				X										
SI MVA143B	SI from LPSI Pump B to Loop 1A	36				X										
SI MVA225A	SI from HPSI A to Loop 1A	55			X ⁽⁴⁾			X (open)								
SI MVA225B	SI from HPSI B to Loop 1A	55			X ⁽⁴⁾			X (open)								
SI MVA226A	SI from HPSI A to Loop 1B	56			X ⁽⁴⁾			X (open)								
SI MVA226B	SI from HPSI B to Loop 1B	56			X ⁽⁴⁾			X (open)								
SI MVA227A	SI from HPSI A to Loop 2A	57			X ⁽⁴⁾			X (open)								
SI MVA227B	SI from HPSI B to Loop 2A	57			X ⁽⁴⁾			X (open)								

**TABLE 3.6-2
CONTAINMENT ISOLATION VALVES**

TABLE NOTATIONS

- (1) Actuation Signals:
 MSIS - Main Steam Isolation Signal
 SIAS - Safety Injection Actuation Signal
 HDIP - High Differential Pressure Between Containment and Annulus
 RAS - Recirculation Actuation Signal
 CSAS - Containment Spray Actuation Signal
 EFAS - Emergency Feedwater Actuation Signal
 CIAS - Containment Isolation Actuation Signal
 CADP - Containment-Ambient Differential Pressure Signal
 CPIS - Containment Purge Isolation Signal (Class 1E Radiation Monitors)
- (2) Valve does not receive CIAS, however a MSIS is considered a containment isolation signal for the purposes of actuation mode.
- (3) Manual Override Provided – CIAS is available but not credited for automatic isolation.
- (4) Containment Isolation Valves whose safety function is to open / remain open post accident are also capable of being closed for containment isolation should that system no longer be required to operate post accident.
- (5) A CSAS is considered a containment isolation signal for the purpose of actuation mode
- (DRN 02-0736, Am. 55)
 (6) Relief valve lifts to protect against overpressurization of the penetration.
 ←(DRN 02-0736, Am. 55)
- (DRN 02-1809, Am. 76)
 (7) Valve does not receive CIAS, since the valve does not have an automatic containment isolation function. The valve, normally closed, receives a SIAS to close to allow suction from the RWSP. The valve under normal conditions may be opened or closed manually. The valve opens on a RAS to allow suction from the SI sump. After RAS initiation, the valve may be closed remotely and manually to isolate any postulated Emergency Core Cooling System (ECCS) passive leakage.
 ←(DRN 02-1809, Am. 76)
- (DRN 03-667, Am. 77)
 (8) The opening of locked or sealed closed containment isolation valves or deactivated automatic containment isolation valves on an intermittent basis under administrative control includes the following considerations:
 - Stationing an operator, who is in constant communication with the control room, at the valve controls.
 - Instructing this operator to close these valves in an accident situation.
 - Assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.
 ←(DRN 03-667, Am. 77)
- (DRN 05-39, Am. 98)
 (9) Valve is not credited for Containment Isolation safety function. Valve receives actuation signal(s) to isolate to prevent inventory loss degrading Steam Generator heat removal and release of radioactivity outside of containment. Tech Spec 3.6.3 is entered if this valve is declared inoperable.
 ←(DRN 05-39, Am. 98)

→(DRN 04-972, Am 90)

3/4.6 CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS MONITORING

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

3.6.4.1 Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: MODE 1 and 2.

ACTION:

→(DRN 04-1191, Am. 91)

- a. With one containment hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or **enter TRM LCO 3.0.3.**
- b. With both containment hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 72 hours and comply with the requirements of ACTION a., or **enter TRM LCO 3.0.3.**

←(DRN 04-1191, Am. 91)

SURVEILLANCE REQUIREMENTS

4.6.4.1 At least once per 31 days each Hydrogen Analyzer shall be demonstrated OPERABLE by performing a CHANNEL CALIBRATION using sample gases containing a nominal:

- a. Zero volume percent hydrogen, balance nitrogen.
- b. 9.5 volume percent hydrogen, balance nitrogen.

←(DRN 04-972, Am. 90)

→(DRN 04-972, Am 90)

←(DRN 04-972, Am. 90)