



FENOC
Davis-Besse Power Station
Transmittal Report

Data Date Time: 04/30/2016 08:28:1 AM
Page 1 of 1

Copy Holder Number: 1665

Name: DOC. CONTROL DESK

Location / Address: OFFSITE / USNRC DIVISION OF EMERGENCY PREPAREDNESS

Transmittal Number: DB-04302016-252880

One White Flint North
11555 Rockville Pike

Rockville, Maryland 20852-2738

Transmittal Date: 4/30/2016 8:24:26 AM

Unit	Document Number	Doc Type	Sheet/Section	Revision	Version	Change Type	Change Number	Document Status	HC	AC	CD	TOC1	TOC2	Changes
DB1	RA-EP-02865	PROC		0000		SIGNIFICANT CHANGE		APPROVED	1	0	0	EPON		
DB1	RA-EP-02865	PROC		0000		SIGNIFICANT CHANGE		REVISED	1	0	0	EPON		
DB1	RA-EP-02865	PROC		0001		SIGNIFICANT CHANGE		APPROVED	1	0	0	EPON		

Use this document transmittal to update the identified documents and remove the superseded documents from use.

AX45
NRR

Davis-Besse Nuclear Power Station

EMERGENCY PLAN OFF NORMAL OCCURRENCE PROCEDURE

RA-EP-02865

LOSS OF CONTAINMENT INTEGRITY

REVISION 01

Prepared by: Ron Tyrie

Procedure Owner: Emergency Response Manager

Effective Date: 04/30/16

LEVEL OF USE:

IN-FIELD REFERENCE

TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE	3
2.0 REFERENCES.....	3
3.0 DEFINITIONS.....	3
4.0 RESPONSIBILITIES.....	3
5.0 INITIATING CONDITIONS.....	4
6.0 PROCEDURE	5
7.0 FINAL CONDITIONS.....	7
8.0 RECORDS	7
9.0 COMMITMENTS.....	7
Attachment 1, Containment Penetration List by Penetration Location.....	8
Attachment 2, Containment Azimuth Overview.....	18

1.0 PURPOSE

- 1.1 This procedure provides a method to determine the source of leakage from containment allowing isolation or other mitigation actions. Stopping or reducing radiological releases from Containment during Emergency Plan events will minimize the dose impact to the General Public and to Station Personnel.

2.0 REFERENCES

2.1 Developmental

- 2.1.1 Davis-Besse Nuclear Power Station (DBNPS) Emergency Plan
- 2.1.2 USAR Table 6.2-23, Containment Vessel Isolation Valve Arrangements
- 2.1.2 Condition Report 11-94552, EP Drill Improvement Opportunity for Loss of Containment Integrity

2.2 Implementation

- 2.2.1 NOP-OP-1015, Event Notifications.
- 2.2.2 NOP-SS-3300, FirstEnergy Enterprise Records Management Program.
- 2.2.3 RA-EP-01500, Emergency Classification
- 2.2.4 RA-EP-02420, Search and Rescue
- 2.2.5 RA-EP-02520, Assembly and Accountability
- 2.2.6 RA-EP-02710, Reentry
- 2.2.7 RA-EP-02864, Containment Evacuation
- 2.2.8 DB-OP-06412, Process and Area Radiation Monitors
- 2.2.9 DB-OP-06504, Emergency Ventilation System
- 2.2.10 DB-PF-03008, Containment Local Leakage Rate Tests

3.0 DEFINITIONS

- 3.1 Loss of Containment Integrity – As it is used in this procedure means a condition, a failure, or a component misalignment that results in a flowpath from Containment to the Environment typically via the Auxiliary Building. This flowpath when combined with elevated containment pressure (such as following a loss of the Reactor Coolant System fission product barrier) produces leak rates that exceed the normally expected containment leakage rates causing a release of radioactive material to the environment.

4.0 RESPONSIBILITIES

- 4.1 The Shift Manager shall implement this procedure with the assistance of the Emergency Response Organization.

- 4.2 The Emergency Director shall evaluate Fission Product Barrier Matrix as described in RA-EP-01500, Emergency Classification procedure and radiological conditions for potential Emergency Classification Upgrade and/or changes to Protective Action Recommendations.
- 4.3 Radiation Protection personnel shall investigate, verify and keep the Shift Manager and the Emergency Response Organization informed of radiological conditions.

5.0 INITIATING CONDITIONS

- 5.1 Initiate this procedure when during Emergency Plan implementation, a loss of containment integrity may exist as indicated by one or more of the following conditions:
- 5.1.1 Confirmed alert and/or high area radiation monitor alarm in areas adjacent to Containment as indicated by:
- a. FIRE OR RADIATION TRBL (9-1-G).
- 5.1.2 Confirmed fire alarm in areas adjacent to Containment as indicated by:
- a. FIRE OR RADIATION TRBL (9-1-G).
- 5.1.3 Confirmed process radiation monitor alarm from one or more of the following:
- a. CREVS TRAIN 1 RAD HI (9-1-A)
 - b. CREVS TRAIN 2 RAD HI (9-2-A)
 - c. UNIT VENT RAD HI (9-3-A).
- 5.1.4 Actuation of Fire Protection System caused by elevated temperatures as indicated by the following:
- (9-5-G) FIRE WTR TURB BLDG PRESS LO
 - (9-2-G) FIRE WTR ELEC PMP ON
 - (9-3-G) FIRE WTR DSL PMP ON
- 5.1.5 Abnormal radiation levels or airborne radioactivity detected during a survey.
- 5.1.6 Confirmed computer radiation alarm in areas adjacent to Containment.
- 5.1.7 Unexpected lowering of Containment Pressure.

6.0 PROCEDUREWARNING 6.1

The Loss of Containment Integrity may result in the release of steam and/or radioactive material from Containment. This may adversely affect anyone in the vicinity of the release.

- 6.1 Evaluate the impact of the Loss of Containment Integrity event (radiation and/or high temperatures near failure point), and affected areas.
- 6.2 IF the decision has been made to evacuate the affected area,
THEN sound the Containment Evacuation Alarm
AND make an announcement such as:
- “Attention all personnel.”
- “Attention all personnel.”
- “Evacuate the _____ Area and report to the Radiological Restricted Area Access Control Point. Notify your supervisor. Avoid the _____ Area.”
- “Evacuate the _____ Area and report to the Radiological Restricted Area Access Control Point. Notify your supervisor. Avoid the _____ Area.”
- 6.3 REFER TO RA-EP-02864, Containment Evacuation, for addition guidance for evacuation of containment or areas near containment.
- 6.4 REFER TO RA-EP-01500, Emergency Classification, and evaluate fission product barrier matrix conditions and radiation levels for possible emergency classification upgrade.
- 6.5 Direct security to obtain a list of personnel in evacuated areas to determine if anyone is in the affected area.
REFER TO RA-EP-02520, Assembly and Accountability.
- 6.6 Assist in locating unaccounted for individuals. REFER TO RA-EP-02420, Search and Rescue as necessary.
- 6.7 REFER TO DB-OP-06412, Process and Area Radiation Monitors, and verify automatic or manual actions associated with alarming area radiation monitors or process radiation monitors have been completed.
- 6.8 Determine a likely Containment Release point as follows:
- Review Fire and Radiation alarms. The Control Room Fire and Radiation CRT provides an overview that may help determine affected areas by displaying rooms with active Fire and/or Radiation Alarms.

NOTE 6.8 •

Radiological Conditions may cause elevated dose rate alarms that are not related to the Loss of Containment Integrity event. These alarms may be due to shine from radiological conditions in Containment.

- The sequence of radiation and fire alarms may point to likely sources with the earliest alarms closest to the initial release point.
 - Evaluate evolutions in progress at start of release. Equipment status changes may provide indications that can be used to determine possible release point.
 - REFER TO Attachment 1, Containment Penetration List by Penetration Location. This attachment provides a list of penetrations sorted by plant area allowing determination of potentially affected penetrations if an impacted plant area is known. In addition, the attachment provides potential isolation points, if available, for each penetration. Penetrations marked with an * are a direct release point from Containment without further failures. For example, the failure of a Containment Vacuum Breaker Penetration (check valve AND motor operated isolation) provides a direct path from Containment.
 - REFER TO Attachment 2, Containment Azimuth Overview to assist in identifying leak locations by Containment Azimuth or adjacent areas.
 - For any area identified, review system conditions for the systems that have containment penetrations noted in Attachment 1, Containment Penetration List by Penetration Location. Changes in system parameters such as changes in temperatures, flows, pressures, etc. may be used to determine potentially affected systems. Isolate or remove affected systems from service to stop releases if possible.
 - Verify proper SFAS Actuation for the Trip Parameters present. REFER TO DB-OP-02000, RPS, SFAS, SFRCS Trip or SG Tube Rupture Table 2, SFAS Actuated Equipment AND Table 4, SFAS Actuate Equipment (Computer Points). The failure of a component to isolate may be the cause of the release.
- 6.9 Notify the Technical Support Center and the Operations Support Center of any suspected Containment Release points.
- 6.10 As determined by the Emergency Response Organization, stop or mitigate any potential release paths as follows:
- 6.10.1 IF an area will be reentered following evacuation,
THEN REFER TO RA-EP-02710, Reentry.
 - 6.10.2 Isolate any potential Containment release paths.
 - 6.10.3 Patch or establish other temporary measures to stop or reduce Containment release.
 - 6.10.4 IF Containment Spray operation to reduce Containment airborne activity level or Containment pressure is desired,
THEN REFER TO DB-OP-06013, Containment Spray System to establish Containment Spray Manual Operation (manual actuation of Containment Spray).

6.10.5 Monitor Radiation Elements and off-site survey data to assess effectiveness of actions taken.

7.0 FINAL CONDITIONS

Potential release locations have been identified and/or compensatory measures taken to reduce the release of Radioactive Material.

8.0 RECORDS

8.1 IF the following quality assurance records are completed by this procedure during a classifiable event,
THEN the records shall be processed and retained as part of the Event Package in accordance with RA-EP-02720, Recovery Organization,
OTHERWISE the following quality assurance records completed by this procedure shall be listed on the Nuclear Records List, captured, and submitted to Enterprise Records Management in accordance with NOP-SS-3300:

8.1.1 None

8.2 The following non-quality assurance records are completed by this procedure and may be captured and submitted to Enterprise Records Management in accordance with NOP-SS-3300:

8.2.1 None

9.0 COMMITMENTS

None

Attachment 1, Containment Penetration List by Penetration Location
Page 1 of 10

This Attachment lists Containment Penetrations by the Area or Room where the penetration enters Containment. The purpose is to allow identification of potential Containment Release Paths after determining an affected area or room. Penetrations marked with an * are a direct release point from Containment without further failures.

ELEVATION 643', MAIN STEAM ROOMS 600, 601

Number	Description	Location	Remote Isolation Points	Drawing Reference
33*	Containment Vessel Purge Inlet Line	Main Steam Line Room to the rear of the west room. 646' elevation 245° azimuth	CV5006 Inside CV5005 Outside	M-029E
39	Main Steam Line from SG 2	#2 Main Steam Line Room 646' elevation 123° azimuth	MS100 Outside None Inside	M-007A, M-284A
40	Main Steam Line from SG 1	#1 Main Steam Line Room 646' elevation 237° azimuth	MS101 Outside None Inside	M-007A, M-284A

ELEVATION 630' CONTAINMENT ANNULUS

Number	Description	Location	Remote Isolation Points	Drawing Reference
8C*	Containment Vessel Vacuum Breaker	Annulus above Equipment Hatch – Center 630' elevation 209° azimuth	CV5072 Outside None Inside	M-029B, M-229
8A*	Containment Vessel Vacuum Breaker	Annulus above Equipment Hatch – Far Left 630' elevation 203° azimuth	CV5070 Outside None Inside	M-029B, M-229
8E*	Containment Vessel Vacuum Breaker	Annulus above Equipment Hatch – Far Right 630' elevation 215° azimuth	CV5074 Outside None Inside	M-029B, M-229
8B*	Containment Vessel Vacuum Breaker	Annulus above Equipment Hatch – Second from Left 630' elevation 206° azimuth	CV5071 Outside None Inside	M-029B, M-229
8D*	Containment Vessel Vacuum Breaker	Annulus above Equipment Hatch – Second from Right 630' elevation 212° azimuth	CV5073 Outside None Inside	M-029B, M-229
8H*	Containment Vessel Vacuum Breaker	Annulus above Incore Mezzanine – Center 630' elevation 151° azimuth	CV5077 Outside None Inside	M-029B, M-229
8F*	Containment Vessel Vacuum Breaker	Annulus above Incore Mezzanine – Far Left 630' elevation 145° azimuth	CV5075 Outside None Inside	M-029B, M-229
8J*	Containment Vessel Vacuum Breaker	Annulus above Incore Mezzanine – Far Left 630' elevation 157° azimuth	CV5079 Outside None Inside	M-029B, M-229

Attachment 1, Containment Penetration List by Penetration Location
Page 2 of 10

ELEVATION 630' CONTAINMENT ANNULUS - continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
8G*	Containment Vessel Vacuum Breaker	Annulus above Incore Mezzanine – Second from Left 630' elevation 148° azimuth	CV5076 Outside None Inside	M-029B, M-229
8I*	Containment Vessel Vacuum Breaker	Annulus above Incore Mezzanine – Second from Right 630' elevation 154° azimuth	CV5078 Outside None Inside	M-029B, M-229

ELEVATION 603', ELECTRICAL PENETRATION ROOM 1

Number	Description	Location	Remote Isolation Points	Drawing Reference
73A*	Containment Pressure Sensor RPS-SFAS Ch 3	#1 EPR 603 Level	CV2002B Outside None Inside	OS-33F
73C*	Containment to Annulus ΔP	#1 EPR 603 Level	CV645B Outside None Inside	OS-33F
73B*	CTMT Air Sample (CTMT Dome)	#1 EPR, 7 ft. high, 2 ft. from the shield building wall. 610' elevation 235.5° azimuth	CV5011C Outside CV5010C Inside	M-029B, FSK-M-HCB-38-4, FSK-M-HCB-38-15, FSK-M-HCB-38-16, FSK-M-HCB-38-17, FSK-M-HCB-38-18, FSK-M-HCB-38-28
102*	Electrical Penetrations	#1 EPR, along the shield building wall.	None – ensure Nitrogen is available	M-019, Manual E-25Q-396, Manual E-25Q-21-5, E-370, E-371

ELEVATION 603', ELECTRICAL PENETRATION ROOM 2

Number	Description	Location	Remote Isolation Points	Drawing Reference
34*	Containment Vessel Purge Inlet Line	#2 EPR toward the rear 14 'high near the ceiling along the shield building wall. 617' elevation 78° azimuth	CV5006 Inside CV5005 Outside	M-029E
72A*	Containment Pressure Sensor RPS-SFAS Ch 2	#2 EPR 603 Level	CV2001B Outside None Inside	OS-33F
72C*	Containment to Annulus ΔP	#2 EPR 603 Level	CV624B Outside None Inside	OS-33F
101*	Electrical Penetrations	#2 EPR, along the shield building wall.	None – ensure Nitrogen is available	M-019, Manual E-25Q-396, Manual E-25Q-21-5, E-370, E-371

Attachment 1, Containment Penetration List by Penetration Location
Page 3 of 10

ELEVATION 603', SPENT FUEL POOL AREA

Number	Description	Location	Remote Isolation Points	Drawing Reference
82*	Equipment Hatch	Spent Fuel Pool Area 603 Level 603' elevation 209° azimuth	None	CB&I Drawing #25, Manual C-37-217-1
23*	Fuel Transfer Tube 1-2	Spent Fuel Pool Canal Transfer Pit 570.75' elevation 170° azimuth (East Tube)	SF1 Outside – Reach Rod (Flange Inside)	M-035, C-254
24*	Fuel Transfer Tube 1-1	Spent Fuel Pool Canal Transfer Pit 570.75' elevation 176° azimuth (West Tube)	SF2 Outside – Reach Rod (Flange Inside)	M-035, C-254

ELEVATION 603' OR 585' AIRLOCKS

80*	Emergency Airlock	Outside 589' elevation 315° azimuth	None	M-029B, CB+I Drawings #100, #152, #164, #200, and #248, Manual C-3 7-217-1
81*	Personnel Airlock	Auxiliary Building 603 603' elevation 130° azimuth	None	M-029B, CB+I Drawings #100, 164, 152, 200 and 248, Manual C-3 7-217-1

ELEVATION 585' MECHANICAL PENENTRATION ROOM 3

Number	Description	Location	Remote Isolation Points	Drawing Reference
36	Auxiliary Feedwater Train 1 Line to SG 1	#3 MPR	AF608 <u>AND</u> EF3** Outside None Inside	OS-17A SH. 1 OS-62
71A*	Containment Pressure Sensor RPS-SFAS Ch 1	#3 MPR 585 Level	CV2000B Outside None Inside	OS-33F
59*	Secondary Side Chemical Cleaning Line	#3 MPR at the top corner on the Shield Building wall, by missile shield. 594' elevation 251° azimuth	None Flange Outside Flange Inside	M-007A, M-229
37	Main Feedwater Line to SG 2	#3 MPR Rear of Room 594' elevation 77° 50' azimuth	FW601 Outside None Inside	M-007A, M-284B

** EF3 is on the Emergency Feedwater line to the Auxiliary Feedwater line.

Attachment 1, Containment Penetration List by Penetration Location
Page 4 of 10

ELEVATION 585' MECHANICAL PENENTRATION ROOM 3- continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
26*	Containment Spray Air Test Line (Train 1)	#3 MPR toward the rear. 598'elevation 251.5° azimuth	CS1530 Outside None Inside	M-034, M-234B, M-234C, FSK-M-HCB-4-1, FSK-M-JBD-10-55, FSK-M-JBD-10-56
71B*	Containment Air Sample (Top of West D-ring)	#3 MPR, 4' high, left of annulus door. 589' elevation 210° azimuth	CV5011A Outside CV5010A Inside	M-029B, FSK-M-HCB-38-1, FSK-M-HCB-38-19, FSK-M-HCB-38-20, FSK-M-HCB-38-21, FSK-M-HCB-38-28
71C	Core Flood Tank 1-1 Fill and Nitrogen Supply Line	#3 MPR, chest high by the pipe chase. 589' elevation 210° azimuth	CV1544 Outside None Inside	M-034, FSK-M-FCB-1-3, FSK-M-FCB-1-6, FSK-M-FCB-7-2

ELEVATION 585' MECHANICAL PENENTRATION ROOM 4

Number	Description	Location	Remote Isolation Points	Drawing Reference
2	SG 1 Secondary Water Sample Line	#4 MPR	SS607 Outside None Inside	OS-51 Sheet 2
18	SG 2 Secondary Water Sample Line	#4 MPR	SS598 Outside None Inside	OS-51 Sheet 2
35	Auxiliary Feedwater Train 2 Line to SG 2	#4 MPR	AF599 Outside None Inside	OS-17A SH. 1
3	CCW Supply to CTMT	#4 MPR 12" diameter piping approx. 12 ft. high, 10ft. inside MPR4. 597' elevation 159° azimuth	CC1411A Inside, CC1411B Outside	M-036C, M-040D, M-236D, M-236E, M-236E, J-1029 SH. 1
43B*	Containment Vessel Air Sample Return (Train 1)	#4 MPR 2 ft. above the catwalk. 593' elevation 144° azimuth	CV5011E Outside None Inside	M-029B, FSK-M-HCB-39-1, FSK-M-HCB-39-3
74A*	Containment Pressure Sensor RPS-SFAS Ch 4	#4 MPR 585 Level	CV2003B Outside None Inside	OS-33F
17*	Containment Vessel Leak Test Line	#4 MPR 8" pipe on shield building wall toward the rear of #4 MPR 597' elevation 110.5° azimuth	CV343 Outside (Flange Inside)	M-029B, M-229
42B*	Containment Vessel Air Sample Return (Train 2)	#4 MPR above catwalk, left of the annulus door 597' elevation 144° azimuth	CV5010E Outside None Inside	M-029B, FSK-M-HCB-39-7, FSK-M-HCB-39-2

Attachment 1, Containment Penetration List by Penetration Location
Page 5 of 10

ELEVATION 585' MECHANICAL PENETRATION ROOM 4 - continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
67*	Hydrogen Dilution System Supply Line	#4 MPR above the catwalk. 593' elevation 147° azimuth	CV5090 Outside None Inside	M-029D, M-229, FSK-M-HBC-73-6
4	CCW Outlet Line from CTMT	#4 MPR Approx. 7' high and 10' inside MPR4 593' elevation 159° azimuth	CC1407A Inside CC1407B Outside	M-036C, M-040D, M-236D, M-236E, M-236F, J-1029 SH. 1
42A	Station Air Supply Line	#4 MPR at center column by pipe chase 597' elevation 144° azimuth	SA2010 Outside None Inside	M-015D, FSK-M-HBB-9-1, FSK-M-HBB-9-2, FSK-M-JBD-11-5
43A	Instrument Air Supply Line	#4 MPR at center column by pipe chase 593' elevation 144° azimuth	IA2011 Outside None Inside	M-015A, FSK-M-HBB-10-1, FSK-M-HBB-10-2, FSK-M-JED-5-1
47B	Core Flood Tanks Vent Valve	MPR4, under the catwalk. 593' elevation 153° azimuth	CF1542 Outside CF5A and CF5B Inside	M-034, FSK-M-FCB-10-3, FSK-M-FCB-9-6, FSK-M-FCB-9-1, FSK-M-FCB-9-2, FSK-M-FCB-9-3, FSK-M-FCB-9-4, FSK-M-FCB-9-5
5	Containment Air Cooler SW Inlet Line	#4 MPR at SW Supply Lines to CACs	SW1366 Outside None Inside	OS-20 SH. 1
6	Containment Air Cooler SW Inlet Line	#4 MPR at SW Supply Lines to CACs	SW1368 Outside None Inside	OS-20 SH. 1
7	Containment Air Cooler SW Inlet Line	#4 MPR at SW Supply Lines to CACs	SW1367 Outside None Inside	OS-20 SH. 1
9	Containment Air Cooler SW Outlet Line	#4 MPR at SW Supply Lines to CACs	SW1356 Outside None Inside	OS-20 SH. 1
10	Containment Air Cooler SW Outlet Line	#4 MPR at SW Supply Lines to CACs	SW1358 Outside None Inside	OS-20 SH. 1
11	Containment Air Cooler SW Outlet Line	#4 MPR at SW Supply Lines to CACs	SW1357 Outside None Inside	OS-20 SH. 1
68B*	Containment Air Sample (Reactor cavity)	#4 MPR floor level, 10 ft. left of annulus vent door 308A under CS 19. 593' elevation 140° azimuth	CV5010B Outside CV5011B Inside	M-029B, FSK-M-HCB-38-7, FSK-M-HCB-38-8, FSK-M-HCB-38-9, FSK-M-HCB-38-10, FSK-M-HCB-38-26, FSK-M-HCB-38-27

Attachment 1, Containment Penetration List by Penetration Location

Page 6 of 10

ELEVATION 585' MECHANICAL PENETRATION ROOM 4 - continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
68A	Pressurizer Quench Tank Sample Line	#4 MPR floor level, by the ladder for the catwalk left of the annulus door. 593' elevation 140° azimuth	SS235A Outside SS235B Inside	M-040A, FSK-M-HCB-26-1, FSK-M-HCB-26-2, FSK-M-HCC-43-2
74C	Pressurizer Auxiliary Spray	#4 MPR just past the black CAC SW pipes. 593' elevation) 10.5° azimuth	DH2736 Outside DH2735 Inside	M-033A, M-033B, M-033C, M-230B, M-233D SHI, FSK-M-CCB-10-1, FSK-M-CCB-10-2, FSK-M-GCB-10-4
1	Pressurizer Sample Line	#4 MPR middle of Catwalk 597' elevation 150° azimuth	RC240A Inside, RC240B Outside	M-030A, M-042C, FSK-M-CCB-17-1, FSK-M-CCB-17-2, FSK-M-CCB-11-3
38	Main Feedwater Line to SG 1	#4 MPR Rear of Room 595' elevation 246° azimuth	FW612 Outside None Inside	M-007A, M-284B
74B*	CTMT Air Sample (Top of East D-ring)	#4 MPR, approximately 2 ft. from the floor, just past the black SW pipes. 593' elevation 110.5° azimuth	CV5010D Outside CV5011D Inside	M-029B, FSK-M-HCB-38-3, FSK-M-HCB-38-11, FSK-M-HCB-38-12, FSK-M-HCB-38-13, FSK-M-HCB-38-14, FSK-M-HCB-38-26
47A	Core Flood Tanks Sample Line	#4 MPR, below the catwalk 593' elevation 153° azimuth	CF1545 Outside CF2A and CF2B Inside	M-034, FSK-M-FCB-8-1, FSK-M-FCB-3-6, FSK-M-FCB-3-5, FSK-M-FCB-3-3, FSK-M-FCB-3-2, FSK-M-FCB-3-4, FSK-M-FCB-3-1
25*	Containment Spray Air Test Line (Train 2)	#4 MPR, left of the annulus door 597'elevation 140° azimuth	CS1531 Outside None Inside	M-034, M-234D, M-233B, FSK-M-GCB-5-1, FSK-M-HCB-4-1, FSK-M-JBD-10-55/FSK-M-JBD-10-57
12	CCW Supply to Control Rod Drive Mechanisms	#4 MPR, one foot above the catwalk. 589' elevation 150° azimuth	CC1567A Inside CC1567B Outside	M-036C, M-236E, J-1029 SH. 1

Attachment 1, Containment Penetration List by Penetration Location

Page 7 of 10

ELEVATION 565' MECHANICAL PENENTRATION ROOM 1

Number	Description	Location	Remote Isolation Points	Drawing Reference
28	Low Pressure Injection Train 1	#1 MPR	DH1B Outside None Inside	OS-004 SH. 1
56	Reactor Coolant Pump Seal Water Return	#1 MPR behind the Boronometer 578'elevation 216° azimuth	MU38 Outside MU59A-D Inside	M-031B, FSK-M-CCB-7-11, FSK-M-CCB-7-19, FSK-M-CCB-7-20, FSK-M-CCB-20-1, FSK-M-CCB-20-5, FSK-M-CCB-20-6, FSK-M-CCB-20-13, FSK-M-CCB-20-16, FSK-M-CCB-20-18, FSK-M-CCB-33-4, FSK-M-CCB-34-3, FSK-M-HCC-3-1,
14	Letdown Line to Purification Demins.	#1 MPR behind the boronometer cage approx. 2-3 ft. high. 578.5' elevation 203.5° azimuth	MU2A Inside MU3 Outside	M-031A, M-231A, M-231B, FSK-M-CCB-9-1, FSK-M-CCB-9-2
22	High Pressure Injection Line	#1 MPR right hand side over pipe chase to ECCS 1-1.	HP2D Outside (HP49 Manual Stop Check Inside)	M-031C, M-033A, M-231E, M-233D, M-233E
50	High Pressure Injection Line	#1 MPR right hand side over pipe chase to ECCS 1-1.	MU6421 Outside HP2C Outside (HP48 Manual Stop Check Inside)	M-031C, M-033A, M-231E, M-233D, M-233E
21	Demineralized Water Supply Line	#1 MPR toward the rear of the room at about knee level. 578.5' elevation 239.5° azimuth	DW6831A Inside DW6831B Outside	M-010C, M-210E, M-210H
49	Refueling Canal Fill Line	#1 MPR, behind Boronometer 578.5' elevation 200° azimuth	None-Manual Valves Only DH87 Outside DH88 Inside	M-033B, M-233G, M-235B
52	Reactor Coolant Pump 2-1 Seal Water Supply	#1 MPR, behind the Boronometer 578.5' elevation 214° azimuth	MU66A Outside (MU242 Manual Stop Check Inside)	M-031B, FSK-M-CCB-8-1, FSK-M-CCB-8-2, FSK-M-CCB-13-7, FSK-M-CCB-14-4
53	Reactor Coolant Pump 2-2 Seal Water Supply	#1 MPR, behind the Boronometer 578.5' elevation 214° azimuth	MU66B Outside (MU243 Manual Stop Check Inside)	M-03 IB, FSK-M-CCB-8-1, FSK-M-CCB-8-2, FSK-M-CCB-13-6, FSK-M-CCB-14-3

Attachment 1, Containment Penetration List by Penetration Location

Page 8 of 10

ELEVATION 565' MECHANICAL PENENTRATION ROOM 1 - continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
54	Reactor Coolant Pump 1-1 Seal Water Supply	#1 MPR, behind the Boronometer 578.5' elevation 210° azimuth	MU66C Outside (MU244 Manual Stop Check Inside)	M-031B, FSK-M-CCB-8-10, FSK-M-CCB-8-11, FSK-M-CCB-8-19, FSK-M-CCB-13-4, FSK-M-CCB-14-1
55	Reactor Coolant Pump 1-2 Seal Water Supply	#1 MPR, behind the Boronometer 574' elevation 210° azimuth	MU66D Outside (MU245 Manual Stop Check Inside)	M-03 IB, FSK-M-CCB-8-10, FSK-M-CCB-8-11, FSK-M-CCB-8-19, FSK-M-CCB-13-5, FSK-M-CCB-14-2
69*	Hydrogen Dilution System Supply Line	#1 MPR, Piping is attached to a small motor and blower on the left toward the rear. 574' elevation 234.5° azimuth	CV5065 Outside None Inside	M-029D, M-229, M-229A

ELEVATION 565' MECHANICAL PENENTRATION ROOM 2

Number	Description	Location	Remote Isolation Points	Drawing Reference
27	Low Pressure Injection Train 2	#2 MPR	DH1A Outside None Inside	OS-004 SH. 1
29	Decay Heat Suction Line	#2 MPR	DH1517 AND DH1518 Outside DH11 Inside	OS-004 SH. 1
44B	CTMT N2 Supply Header	#2 MPR 1-inch yellow pipe, approx. 9' high and 8' inside #2 MPR. 578.5' elevation 125° azimuth	NN236 Outside None Inside	M-019, FSK-M-HBB-14-1, FSK-M-HBB-14-2, FSK-M-HBD-206-19, FSK-M-HBD-423-1
13*	Containment Vessel Normal Sump Drain	#2 MPR About 15' inside room along south wall. 574' elevation 135.5° azimuth	DR2012A Inside DR2012B Outside	M-046, M-246A, FSK-M-HBC-9-2, FSK-M-HBB-2-1
16	Containment Vessel Equipment Vent Header	#2 MPR about knee high along the shield building 578.5' elevation 132° azimuth	RC1719A Inside RC1719B Outside	M-040A, M-240C, M-240D
41	Pressurizer Quench Tank Circulation Inlet Line	#2 MPR approximately 15' inside the room. 574' elevation 125° azimuth	RC232 Outside None Inside	M-040A, FSK-M-HCC-89-2, FSK-M-HCC-86-3, FSK-M-HCC-86-2, FSK-M-HCC-86-1, FSK-M-HCB-7-1, FSK-M-HCB-7-2

Attachment 1, Containment Penetration List by Penetration Location
Page 9 of 10

ELEVATION 565' MECHANICAL PENENTRATION ROOM 2 - continued

Number	Description	Location	Remote Isolation Points	Drawing Reference
19	High Pressure Injection Line	#2 MPR inside door on wall, valves are about 15' high 578.5' elevation, 128.5° azimuth	HP2A Outside (HP57 Manual Stop Check Inside)	M-031C, M-033A, M-231E, M-233D, M-233E
20	High Pressure Injection Line	#2 MPR inside door on wall, valves are about 15' high 578.5' elevation, 128.5° azimuth	MU6422 Outside HP2B Outside (HP56 Manual Stop Check Inside)	M-031C, M-033A, M-231D, M-233D, M-233E
57	SG 2 Blow Down Line	#2 MPR near Wet Layup Recirc Pump	MS603 Outside None Inside	OS-008 SH. 3 OS-008 SH. 5
60	SG 1 Blow Down Line	#2 MPR near Wet Layup Recirc Pump	MS611 Outside None Inside	OS-008 SH. 1 OS-008 SH. 3
51*	Hydrogen Purge System Exhaust	#2 MPR on high catwalk. 574.5' elevation 121.5° azimuth	CV5038 Outside None Inside	M-029D, M-229, M-229B, M270, FSK-M-HJBC-73-7, FSK-M-HBC-F60

ELEVATION 565' TOP OF FUEL TRANSFER TUBE AREA – ROOM 221

44A	Core Flood Tank 1-2 Fill and N2 Supply Line	Above the fuel transfer tubes, less than 1 ft. above the floor. 578.5' elevation 125° azimuth	CF1541 Outside None Inside	M-034, FSK-M-FCB-7-1, FSK-M-FCB-1-1, FSK-M-FCB-1-2, FSK-M-FCB-1-5, FSK-M-FCB-1-4
-----	---	---	----------------------------	--

ELEVATION 565', MAKEUP PUMP ROOM

Number	Description	Location	Remote Isolation Points	Drawing Reference
32	Reactor Coolant System Drain Line to R.C. Drain Tank	MU Pump Room just past the Emergency Sump Valves 566' elevation 159° azimuth	RC1773A Inside RC1773B Outside	M-040A, M-240A, M-240C
48	Pressurizer Quench Tank Circulation Outlet Line	MU Pump Room, past the Emergency Sump Valve cutouts, on the Shield Building wall at the floor level. 566' elevation 162° azimuth	RC229A Outside RC229B Inside	M-040A, M-240B

Attachment 1, Containment Penetration List by Penetration Location

Page 10 of 10

ELEVATION 545', #1 EMERGENCY CORE COOLING ROOM

Number	Description	Location	Remote Isolation Points	Drawing Reference
30*	CTMT Vessel Emergency Sump Recirc Line	#1 ECCS Pump Room Toward the rear at ceiling level. 561'elevation 148° azimuth	DH9B Outside None Inside	M-033C, M-283
31*	CTMT Vessel Emergency Sump Recirc Line	#1 ECCS Pump Room Toward the rear at ceiling level. 561'elevation 154° azimuth	DH9A Outside None Inside	M-033C, M-283

Attachment 2, Containment Azimuth Overview

Page 1 of 1

This Attachment provides approximate Containment Azimuth values (bolded degree values) as well as an overview of areas adjacent to Containment.

