DAVIS-BESSE NUCLEAR POWER STATION UNIT NO. 1

SECTION 4.0

APPENDIX 4, SECTION III.G. EVALUATION

and

FIRE HAZARD EVALUATION

4.0 APPENDIX R, SECTION III.G EVALUATION

4.1 Introduction

The purpose of this section is to evaluate the fire protection features that assure Safe Shutdown capability as required by Section III.G of Appendix R to 10 CFR 50. The components and circuits required for Safe Shutdown were identified by the methodology described in Section 3.

Section 5 provides a discussion of the identification and routing information for Associated Circuits. The circuit routing information for Safe Shutdown Circuits and Associated Circuits was sorted by fire area (Refer to Appendices B-2 and C-2, respectively). This made possible the evaluation of Safe Shutdown System components and circuits, as well as Associated Circuits, to the requirements of Section III.G criteria.

The following aspects of the existing plant configuration were considered during the evaluations of each of the fire area's compliance with Section III.G:

1) the barriers rated from 1 to 3-hours,
2) the fire suppression systems,
3) the fire detection systems,
4) the combustible loading and
5) the safe shutdown systems,

This information is provided for each fire area in Section 4.6 when credit is taken for barriers in addition to those defining the fire area. Specific items not in compliance with Section III.G, as well as their resolutions, are identified.

4.2 Requirements

The requirements for fire protection of Safe Shutdown capability is defined in Appendix R, Section III.G. This regulation requires that fire protection be provided to ensure that one train of equipment necessary to achieve and maintain Safe Shutdown remains available in the event of a fire at any location within the plant. For Hot Standby conditions, one train of the necessary systems must be free of fire damage (III.G.1.a). For Cold Shutdown conditions, both trains of equipment necessary to achieve and maintain Cold Shutdown conditions may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least one train can be repaired within 72-hours using "in place" procedures and materials available onsite (III.G.1.b).

Section III.G.2 lists specific options to provide adequate protection for redundant trains of Safe Shutdown equipment. For any fire area outside of primary Containment, the options are as follows:

a. Separation by a fire barrier having a 3-hour rating (III.G.2.a), or

b. Separation by a horizontal distance of at least 20 feet with no intervening combustibles and with fire detection and automatic fire suppression installed in the fire area (III.G.2.b), or

c. Enclosure of one train in a fire barrier having a 1-hour rating in addition to having fire detection and automatic suppression installed in the fire area (III.G.2.c).

For a noninerted Primary Containment, Section III.G.2 specifies one of the above three protection options, or any of the following:

a. Separation by a horizontal distance of at least 20 feet with no intervening combustibles or fire hazards (III.G.2.d).

b. Fire detection and automatic fire suppression installed in the fire area (III.G.7.e).

c. Separation of redundant trains by a noncombustible radiant energy shield (III.G.2.f).

If the protection required by Section III.G.2 is not provided or the systems of concern are subject to damage from fire suppression activities, Section III.G.3 of the rule requires that an alternate or dedicated Shutdown capability be provided which is independent of the area of concern. Appendix R Section III.L dictates the requirements for such cases.

For situations in which fire protection does not meet the requirements of Section III.G, plant modifications or plant procedural changes must be made to achieve compliance. However, if existing protection is deemed to be adequate for the specific situation, the rule allows the licensee to request an exemption on a case-by-case basis. Such exemption requests must be submitted to the NRC for review and approval and must be justified by the licensee on a technical basis. Generic Letter 86-10 provides additional guidance on which deviations require such an exemption and which others can be justified in a licensee evaluation without prior NRC approval.

4.3 Assumptions

In the course of performing the Section III.G separation analysis, several positions or assumptions needed to be established, as follows:

1. The availability of component status indication need not be assured. Each indicating circuit is, however, to be assessed for potential impact on the ability of the components to perform its function.

2. Passive mechanical components are assumed to remain available after a fire. these components include heat exchangers, manual, relief and check valves, piping and tanks.

3. NFPA Handbook has been utilized as guidance in determining that 80,000 Btu/ft^2 of Class A combustibles constitutes a 1-hour fire loading.

4. Components that have been determined not to be required for Safe Shutdown (i.e. not required to be operable or not a spurious actuation concern for Appendix R considerations), and hence, are not included on the SSCL (Appendix A), are not to be addressed for consequences of fire-induced failures.

5. Cables located in conduit embedded in concrete walls, floors and ceilings are to be considered as part of the fire area. Credit is taken for separation where adequate protection is provided by the concrete enclosing the conduit (Reference Section 1, Table 1, exemption 11).

6. A fire is the total heat energy which can be released based on the combustible loading.

7. Only one fire and its effects are postulated to occur at a time and the fire will not propagate past the rated barriers. However, credit is taken for horizontal separation within a fire area based on the combustible loading, the spatial separation, the type of suppression and physical barriers.

4.4 Evaluation Methodology

The Safe Shutdown and Associated Circuits were routed on the plant Electrical Raceways and Grounding Drawings (Reference 2.1.G) to identify in which fire areas the circuits are located. the specific details of this task are described in Section 3.8.

Where separation within a fire area was a concern, the Safe Shutdown Circuits and Associated Circuits were identified, where required, by color coding the corresponding conduits/cable trays. These marked-up physical drawings were used to support the separation evaluation described below.

Fire protection features information was derived from the FHAR and Fire Protection Drawings (A-220F through A-231F, Reference 2.1.D), and Fire Protection System Sprinkler Drawings (M-269 series, Reference 2.1.L) and the Barrier Function List (C-1594 Reference 2.1.R).

With the amount of separation, types and quantities of combustibles, and the existence (if any) of detection and suppression in the area identified, a method of compliance with Appendix R, Section III.G criteria was developed. Any required physical or procedural changes are identified in Section 4.6.

4.5 Methods of Achieving Compliance

The results of the detailed separation analyses described in the preceding sections indicate:

1. The fire areas which meet the criteria of Appendix R, Section III.G,

2. The fire areas requiring procedural revisions or physical modifications to meet the criteria, and

3. The fire areas that incorporate equivalent protection and for which exemptions are requested.

4.6 Fire Area Evaluations

The evaluation of each fire area is presented in this subsection. Each fire area evaluation includes the basis for the conclusions of compliance, and a summary of the approved exemption request(s).

Each of the fire area evaluations included in this subsection were developed using a standard format as follows (note that the “-“ refers to the Fire Area designation):

Note: Room descriptions shown are nominal. Variations of the room descriptions may exist and be shown on various documents, however, the design functions of these rooms have not changed.

4.6._.1 Fire Area Description - This subsection provides an overview of the room numbers and descriptions that comprise the fire area in addition to the fire protection features.

The purpose of this subsection is to provide the above information at a glance. For detailed information relating to the fire area boundaries, the fire protection systems, and the combustible loading are contained in other portions of Section 4 of this report.

4.6._.2 Safe Shutdown Systems in the Fire Area - This subsection provides an overview of the Shutdown Systems and components located in the fire area. The component Train, type and description are also provided. (Note: Appendices B2 and C2 provide a listing of cables/circuits).

The purpose of this subsection is to provide at a glance information as to which Safe Shutdown Systems and components could be impacted by a fire in this fire area

4.6._.3 Fire Propagation Control - This subsection provides an overview of the means of ensuring that a fire originating in the fire area does not spread to an adjoining fire area. The fire barriers, fire doors, and any openings located in the fire area are identified. Any analyses of non-rated openings and of combustible loading restrictions are identified.

4.6._.4 Fire Detection and Suppression - This subsection provides an overview of the fire detection and suppression features located in the fire area.

4.6._.5 Fire Area Safe Shutdown Summary - The summary specifies which Train is being assured for Shutdown, the availability of certain critical Safe Shutdown components required operable for providing RCS pressure and Pressurizer Level Control and for maintaining Hot Standby are identified for a fire in the particular fire area.

4.6._.6 Detailed Analysis For Safe Shutdown - This information is presented in tabular form (Table 1). All circuits and components for the accredited Train, as well as the disposition of each, are identified. It provides information concerning each circuit with regard to an abbreviated justification for compliance. The table also references the notes that explain the justification.

Certain Safe Shutdown components serve as either Train 1 or Train 2 components depending on which train the component is supporting. For example, CCW Pump 3 is a “swing” pump in that it may either service Train 1 or Train 2 of the CCWS.

All such components are designated as “1/2” components. These “swing” components may have Channels 1, 2 and 3 circuits. If Train 1 was being assured for Shutdown and circuits for such a component passed through the fire area under consideration, only the channel 1 and 3

circuits would appear on Table 1. Channel 2 circuits would not appear since no credit is taken for these circuits. In a Train 2 area the reverse will apply.

Certain Safe Shutdown components are identified as “boundary valves” and/or “High/Low Interfaces” which means that the valve is required to remain closed to preclude flow diversion. Such components need to be evaluated for all fire areas where circuits for the component are located regardless of the Train being assured for Shutdown. As an example, the Pilot-Operated Relief Valve (PORV), despite having Train 2 circuits, must be addressed for all fire areas so that the possible spurious actuation of the valve does not result in a loss of RCS pressure or inventory control.

Certain Safe Shutdown components for the nonaccredited Train are included because their potential automatic actuation from spurious or actual signals (e.g. SFAS or SFRCS) may require compensatory operator action. For these components, any circuits located in the fire area are included regardless of their Train.

Table 1 provides component specific information as follows:

Column

1. System - Safe Shutdown System (e.g. HPIS, RCS, etc.)

2. Component - Plant I.D. Number (e.g. SW1382)

3. Description - Describes the component

4. Type - Nature of component (e.g. SOV, PUMP, MOV, etc.)

5. Comp Loc (Component Location) - Fire area in which the component is physically located.

6. TRN - Specifies the component’s Train. Components identified as “1/2” are special components such as High/Low Interface valves as discussed above.

7. Normal Mode - Specifies the position of the component during normal plant operation.

8. Shutdown Mode - Specifies the desired position of the component if the component were to be utilized for Shutdown. It does not necessarily state what the position will be for a fire in a particular fire area. For example, the shutdown mode of the SW Pumps 1, 2, and 3 is “on” since that is their desired operational mode if credit was taken for the individual pump. However, in actuality, only one of the pumps would be operated for Shutdown while the other two would be off.

9. Fail - Identifies the position to which the component fails on loss of power.

10. Backup for - Specifies if the component under consideration is a backup for another component which would be identified in this column.

11. Compon Info (Component Information) - This column receives single and double letter designators which reference the legend on the bottom of the page. Hence,

letters H, for example, indicate that the component is required for Hot Standby (H).

12. Circuit - Circuit(s)/Subcomponents of concern in the fire area.

13. Interlock - Identifies various circuit interlocks.

14. Required Change - Identifies many of the physical or procedural changes that were required to achieve compliance with Appendix R.

15. Justification - Provides an abbreviated description of the justification that appendix R requirements are met in spite of failure of the circuit. The full justification is contained in the Notes referenced for each affected circuit.

16. Notes - These Notes provide the justification for concluding that Appendix R requirements are met in spite of failure of the circuit.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: A

TRAIN ACCREDITED FOR SHUTDOWN: 1/2

4.6.A.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
102	SPENT RESIN STRG TNK RM	400	N	MAN
103	SPENT RESIN XFER PMP RM	400	N	MAN
104	DECONTAMINATION AREA	400	N	MAN
104A	MONORAIL AREA	400	N	MAN
106	RADIOACTIVE EQPT STRG RM	1,695	N	MAN
106A	SAMPLING HOOD ROOM	3,653	N	MAN
107	RC DRAIN TANK ROOM	400	N	MAN
108	RC DRN TNK PMP RM	1,313	N	MAN
109	MAINTENANCE WORK AREA	24,000	N	MAN
109A	PASSAGE	400	N	MAN
110	PASSAGE	11,973	Y	MAN
110A	PASSAGE	10,151	Y	MAN
111	CONC STORAGE TANK ROOM	400	N	MAN
112	DECON AREA	400	Y	MAN
114	MISC WASTE MNTR TNK/PMP	41,372	Y	MAN
115	ECCS PMP RM 1-2	6,919	Y	MAN
115CC	CABLE CHASE	83,151	N	MAN
116	MISC WASTE EVAP RM	400	N	MAN
117	WSTE EVAP STRG TNK/PMP RM	400	N	MAN
117A	COND TNK & PMP RM	400	Y	MAN
119	DEGASIFIER RM	400	N	MAN
120	VALVE RM	400	N	MAN
121	WASTE GAS SRGE TANK RM	400	N	MAN
122	VALVE ACCESS RM	8,866	N	MAN
123	CLEAN WASTE RECVR TNK RM	2,801	N	MAN
124	CLEAN WASTE RECVR TNK RM	9,352	Y	AUTO
125	DET WSTE DRN TNK RM	624	N	MAN
126	MISC WASTE TNK RM	400	N	MAN
127E	CONTAINMENT ANNULUS(EAST)	8,310	Y	MAN
236	NO.2 MECH PENETRATION RM	12,695	Y	AUTO
314	NO.4 MECH PENETRATION RM	37,764	Y	AUTO
314CC	CABLE CHASE	317,007	Y	MAN

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4.6.A.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA A

The following components are located in fire area A.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
AFWS	2	AF599	MOV	AFW TO SG2 ISO VLV
CCWS	1/2	CC1407B	MOV	CCW OUT ISO VLV FROM CTMT
	1/2	CC1411B	MOV	CCW INLET ISO VLV TO CTMT
CSS	2	CS1531	MOV	CTMT SPRAY ISO VLV
	2	P56-2	PUMP	CS PUMP 2
DHRS	2	DH01A	MOV	LPI LINE 2 VLV
	1	DH1517	MOV	DH NORM SUCT LINE 1 VLV
	2	DH1518	MOV	DH NORM SUCT LINE 2 VLV
	1/2	DH2736	MOV	DH AUX SPRAY THRTL VLV
	2	DH63	MOV	LPI/HPI CROSS-TIE VLV
	2	P42-2	PUMP	DHR/LPI PUMP 2
ESSPWR	2	F11C	MCC	480VAC MCC
	1/2	RC1761	PNL	CONT POWER (WC1747)
	1	RC3701	PNL	DC CONTROL POWER TO CAC 1 OUT VLV
	2	RC3702	PNL	DC CONTROL POWER TO CAC 2 OUT VLV
	2	RC3705	PNL	CONT POWER RC3705 (LR3758)
HPIS	2	HP02A	MOV	HPI 2 DISCH ISO VLV
	2	HP02B	MOV	HPI 2 DISCH ISO VLV
	2	HP31	MOV	HPI PMP 2 RECIRC VLV
	2	P198-1	PUMP	HPI PMP 2 AC LO PMP
	2	P198-2	PUMP	HPI PMP 2 DC LO PUMP
	2	P58-2	PUMP	HPI PUMP 2
MUPS	2	HP27	MAN	HPI TO RCP SEALS
	2	MU6422	MOV	MU CTMT ISO VLV
	1/2	T15-1	TANK	CLEAN WASTE RECEIVER TANK 1-1
	1/2	T15-2	TANK	CLEAN WASTE RECEIVER TANK 1-2
	1/2	WC119	MAN	CLEAN WASTE TANKS INLET LINE ISO VLV
	1/2	WC1743	SOV	CLEAN WST RCVA TK IN VLV
	1/2	WC1747	SOV	CLEAN WST RCVR TK IN VLV
SFAS	1/2	HIS6453	HIS	SG AUTO ESSEN LEVEL CONTROL
	1/2	HIS6454	HIS	SG AUTO ESSEN LEVEL CONTROL
SWS	1	SW1356	SOV	CAC 1 OUT ISO VLV
	2	SW1357	SOV	CAC 2 OUT ISO VLV
	1/2	SW1358	SOV	CAC 3 OUT ISO VLV
	1	SW1366	MOV	CAC 1 IN ISO VLV
	2	SW1367	MOV	CAC 2 IN ISO VLV
	1/2	SW1368	MOV	CAC 3 IN ISO VLV
SWS	2	SW1383	MOV	AFP 2 SUCT VLV FROM SW
	1/2	SW325	MAN	CAC 3 SW OUT ISO VLV

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4.6.A.3 Fire Propagation Control

Fire Area A is located in the Auxiliary Building consisting primarily of the eastern half of the first 4 levels (545', 555', 565', 585') of the Aux Bldg and the eastern half of the Containment Annulus, as shown on drawings A-221 F through A-223F. The area includes numerous rooms, pipe/cable chases and ventilation openings which prevent further subdivision by 3-hour fire-rated barriers. The major openings are discussed below.

There is a 4 ft. x 4 ft. Pipe Chase opening located between Room 314 and Room 115 which runs through the floor and ceiling of Room 236. This opening is required as a flow path for the EVS. Fire suppression systems have been installed in Rooms 314 and 236.

Room 236 is located on Elevation 565'-0" of the Auxiliary Building. There is an opening in the north wall allowing access to the Annulus. A wire door is located in the opening, which is approximately 4 ft. wide x 7 ft. high. The opening is used as a flow path for the EVS.

There is an opening in the west wall of Room 314 allowing access to the Annulus. A wire door is located in the opening, which is approximately 4 ft. wide x 7 ft. high. The opening is used as a flow path for the EVS.

Room 102 has an opening 23" x 8" in size in the north wall 44 that FD-1101 is in. Due to high-rad areas and inaccessibility the damper cannot be inspected or reworked, therefore it is a non-rated opening.

A fire that originates in this fire area will be contained within the fire area. This fire area is enclosed by 3-hour rated concrete walls (except as noted below).

In order to preclude any direct flame/fire communication between ECCS Pump Room 105 (Fire Area AB) and ECCS Pump Room 115 (Fire Area A) through an opening into Room 113A (Fire Area AB), a 3-hour fire-rated door assembly (Door 119A) was installed to protect the opening. Fire Door 119A is held open, in order to accommodate HVAC considerations, by an electromagnetic door holder/closer. Upon actuation of the smoke detection system in either ECCS Pump Room (115 or 105) or Room 113A (located between Rooms 105 and 115), the electromagnetic door holder de-energizes, releasing the door allowing the mechanical door closer to bring the door to a closed position.

In order to preclude any direct flame/fire/smoke communication between the Corridor Room 110 (Fire Area A) and Elevator Machine Room 118 (Fire Area AD) through an opening, a 1-1/2-hour fire-rated door assembly (Door 103) was installed to protect the opening. Fire Door 103 is held open, in order to accommodate tornado depressurization vent considerations, by an electromagnetic door holder/closer. Upon actuation of the smoke detection system in either the Corridor (110) or the Elevator Machine Room (118), the electromagnetic door holder de-energizes, releasing the door allowing the mechanical door closer to bring the door to a closed position.

The Annulus (Rm 127) is divided in half. One half is in Fire Area A, the other in Fire Area AB. There are no fire barriers separating the 2 halves, but, based on the low combustible loading in

the Annulus and the large spatial separation between the combustibles, a fire would not propagate from one half of the Annulus to the other half.

The Annulus is separated from Containment by the steel pressure vessel. Based on the construction and low combustible loading, a fire will not propagate from the Annulus to Containment.

The ceiling of Room 102 contains a non-rated concrete plug between it and Room 300 (Fire Area V). This plug will prevent the spread of a fire from one area to the other.

The west wall of Room 124 contains one non-rated opening. To preclude any direct flame/fire communication with Room 235 (Fire Area G), an automatically actuated water curtain is installed.

The north wall of Room 124 contains two 14 inch pipe penetrations which interface with Auxiliary Feed Pump Rooms 237 (Fire Area E) and 238 (Fire Area F). These penetrations are required in order to avert the consequences of a flooding condition in the Auxiliary Feed Pump Rooms (AFPR's). The lines are open ended in Rooms 237 and 238, extend into Clean Waste Receiver Tank (CWRT) Room 124 and terminate in 14 inch diameter, wafer-style check valves. As shown - on Drawing A-222F, the north wall of CWRT Room 124 is a 3-hour fire rated barrier separating Fire Area A from Fire Areas E and F. The lines are provided to preclude flooding of the AFPR's and subsequent loss of the Auxiliary Feed Pump(s).

The ceiling of Room 110A contains one non-rated opening communicating Area A to Area G. This is a ventilation opening and a hatch area. The ventilation opening is protected by a fire damper and the hatch area is protected by Dura Steel.

There is a 3-hour fire-rated wall separating Rooms 115 and 116 from Rooms 123 and 124 (all within Fire Area A). This wall is used to help separate Train 1 circuits from Train 2 circuits. (See Section 4.6.A.5 for more detail).

The south wall of Room 236 contains one non-rated opening which communicates with Room 235 (Fire Area G). To preclude any direct flame/fire communication with Room 235, an automatically actuated water curtain is installed.

The No. 4 Mechanical Penetration Room (314) is located on Elevation 585'-0" of the Auxiliary Building. There are five non-rated openings in the ceiling of 314. The physical size of the non-rated openings are four 30 in. x 20 in. ducts and one 48 in. diameter duct and are located in the ceiling of Room 314 which communicate Fire Area A with Fire Area DF. Since both fire areas contain fire suppression systems, a fire will not propagate from one area to another.

The east wall of room 314 contains six non-rated openings which communicate with Room 326 (Fire Area II). To preclude any direct flame/fire communication with Room 326 an automatically actuated water curtain is installed.

There are several penetrations which have penetration seals that do not meet the test configurations or penetrations with small annular gaps (too small to seal properly). These non-rated openings have been evaluated and will not allow the propagation of a fire to another fire area.

Rooms 110, 112, 110A have structural steel which does not have a 3-hr fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in these rooms.

Room 114 has structural steel which does not have a 3-hr fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in this room.

Rooms 123, 125 and 126 have structural steel which does not have a 3-hr fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in this room.

Rooms 124, 236 and 314 have structural steel which does not have a 3-hr fire rating. Based on analysis of the combustible loadings and automatic wet-pipe sprinklers in these rooms, the steel will not fail.

4.6.A.4 Fire Detection and Suppression

Fire Area A consists of various rooms and/or plant areas. The following areas have detection:

1. ECCS Pump Room 115, Fire Detection Zone FDZ 115
2. Misc. Waste Monitor Tank and Pump Room 114, Fire Detection Zone FDZ114.
3. Passage 110, Passage 110A, Decontamination Area 112 and Condensate Collection Tank and Pump Room 117A, Fire Detection Zone FDZ 110
4. Clean Waste Receiver Tank Room 124, Fire Detection Zone FDZ 124
5. Cable Chase, Fire Detection Zone FDZ 314
6. No. 2 Mechanical Penetration Room 236, Fire Detection Zone FDZ 236
7. No. 4 mechanical Penetration Room 314, Fire Detection Zone FDZ 314
8. Containment Annulus (East) Room 127E

The following rooms are provided with automatic wet-pipe sprinkler systems:

1. Clean Waste Receiver Tank Room 124
2. No. 2 Mechanical Penetration Room 236
3. No. 4 Mechanical Penetration Room 314

The following barrier penetrations are protected by automatic deluge spraywater curtains:

1. Opening between Room 124 and 235 (Fire Area G)
2. Opening between Room 236 and 235 (Fire Area G)
3. Opening between Room 314 and 326 (Fire Area II)

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on drawings A-221F through A-231F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.A.5 Fire Area A Safe Shutdown Summary

Fire Area A utilizes both Trains for Safe Shutdown depending on the location of the fire. Train 2 is accredited for a fire located in all parts of Rooms 123 and 124 except for the northwest corner of Room 124 where Train 1 is accredited. Train 1 is also accredited for Safe Shutdown if the fire is located in all other rooms in fire A.

Train 1 Safe Shutdown will be accomplished by using HPI, and the PORV for initial depressurization. Train 2 Safe Shutdown will be accomplished by using the Makeup System.

An exemption has been granted for Rooms 123/124 to the extent Appendix R requires separation of redundant Safe Shutdown components by 3-hour rated fire barriers. Specifically, Train 1 circuits in Rooms 123 and 124 are not separated from Train 2 circuits in Room 115 by a complete 3-hour fire-rated barrier.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146B		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14,15
											1CBE1146H		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14,15
											1PBE1146A		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14,15
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	1CD107E		OP-02501 (OPEN AF3870)	OP-02501 (OPEN AF3870)	14,50
											1CD107G		OP-02501 (OPEN AF3870)	OP-02501 (OPEN AF3870)	14,50
											1PD107A		OP-02501 (OPEN AF3870)	OP-02501 (OPEN AF3870)	14,50
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	2PBF1201A		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14,15
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	2CBF1262F			ADEQUATE SEP FOR FIRE IN 123/124	2,14
											2CBF1262G			ADEQUATE SEP FOR FIRE IN 123/124	2,14
											2PBF1262A			SPURIOUS CLOSURE NOT CREDIBLE	5B
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	2CBF1118C			ADEQUATE SEP FOR FIRE IN 123/124	2
											2CBF1118D			ADEQUATE SEP FOR FIRE IN 123/124	2
											2CBF1118G			ADEQUATE SEP FOR FIRE IN 123/124	2
											2PBF1118A			ADEQUATE SEP FOR FIRE IN 123/124	2
											2PBF1118B			ADEQUATE SEP FOR FIRE IN 123/124	2
											EV0599			ADEQUATE SEP FOR FIRE IN 123/124	2
											MV599			ADEQUATE SEP FOR FIRE IN 123/124	2
											NV0599A			ADEQUATE SEP FOR FIRE IN 123/124	2
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	2CLC6451C		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											2CLC6451D		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											2CLY6454A		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											2CLY6454B		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											2LLC6451E		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											2LLC6451G		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
											RC3702		OP-02501 (FAIL OPEN AF6451)	OP-02501 (FAIL OPEN AF6451)	17
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	1CLC6452C		OP-02501 (FAIL OPEN AF6452)	OP-02501 (FAIL OPEN AF6452)	17
											1CLY6453A		OP-02501 (FAIL OPEN AF6452)	OP-02501 (FAIL OPEN AF6452)	17
											1CLY6453B		OP-02501 (FAIL OPEN AF6452)	OP-02501 (FAIL OPEN AF6452)	17
											1LLC6452B		OP-02501 (FAIL OPEN AF6452)	OP-02501 (FAIL OPEN AF6452)	17
											RC3701		OP-02501 (FAIL OPEN AF6452)	OP-02501 (FAIL OPEN AF6452)	17
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	1CLC6459B			NOT REQUIRED FOR S/D	7
											1CLC6459H			NOT REQUIRED FOR S/D	7
											1LLC6459A			NOT REQUIRED FOR S/D	7
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	2LLC6460C			NOT REQUIRED FOR S/D	7
											2LLC6460E			NOT REQUIRED FOR S/D	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE		OP-02501 (OPERATE ICS038A)	OP-02501 (OPERATE ICS038A)	17
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	1CAFPT01B		OP-02501 (OPERATE ICS038B)	OP-02501 (OPERATE ICS038B)	17
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1CD135F		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135G		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135H		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135K		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135L		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135P		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135R		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135V	PSL4930A	OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											1CD135Y		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
											RC3701		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	19
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271K	PSL4930B		OP-02501 (TRIP P14-2)	18
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	2CBF1124F	PS107B		ADEQUATE SEP FOR FIRE IN 123/124	10

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	2CBF1124I			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1124K	PS107A		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1124P	PS107D		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1124R	PS107C		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1124V	PSL4931A		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1124X			ADEQUATE SEP FOR FIRE IN 123/124	10
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188K	PSL4931B		OP-02501 (TRIP P14-1)	18
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	1CV5889AB			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											1CV5889AC			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											1CV5889AG			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											1CV5889AH			ADEQUATE SEP FOR FIRE IN 123/124	2,10
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	2CV5889BB			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											2CV5889BC			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											2CV5889BG			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											2CV5889BH			ADEQUATE SEP FOR FIRE IN 123/124	2,10
											RC3702			ADEQUATE SEP FOR FIRE IN 123/124	2,10
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1 S/D TRN 2)	OP-02501 (TRIP P14-1 S/D TRN 2)	18
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2 S/D TRN 1)	OP-02501 (TRIP P14-2 S/D TRN 1)	18
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	BCAD210D		OP-2501 (ENSURE DISCH VLV CLSD)	OP-2501 (ENSURE DISCH VLV CLSD)	54
											BCAD210E		OP-2501 (ENSURE DISCH VLV CLSD)	OP-2501 (ENSURE DISCH VLV CLSD)	54
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	1CBE1401G			EMBEDDED CONDUIT	1*
											1CBE1401J			EMBEDDED CONDUIT	1*
											1CBE1401K			EMBEDDED CONDUIT	1*
											1PBE1401A		MOD 89-0074	1HR WRAP P1P3CX	1
											1PBE1401B		MOD 89-0074	1HR WRAP 46097A, 46098A, 1PGS	1
											1PBE1401C			3HR WRAP P1P3B	3
											1PBE1401D			3HR WRAP P1P3B	3
											P1P3BX		MOD 89-0074	1HR WRAP P1P3BX	1
	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	2PBF1401C			NOT REQUIRED FOR S/D IN 127E	N/A
											2PBF1401D			NOT REQUIRED FOR S/D IN 127E	N/A
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	1CBE1501F			NOT REQUIRED FOR S/D	7
											1CBE1501G			NOT REQUIRED FOR S/D	7
											1CBE1501H			NOT REQUIRED FOR S/D	7
											3PBEF15A			NOT REQUIRED FOR S/D	7
											3PBEF15B			NOT REQUIRED FOR S/D	7
											3PBEF15C			NOT REQUIRED FOR S/D	7
											3PBEF15D			NOT REQUIRED FOR S/D	7
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13,16
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1158B		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											2CBF1158C		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											2CBF1158D		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											2PBF1158A		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											EV1407B		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											MV1407B		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
											NV1407B		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,16
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2CBF1227D	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2PBF1227B	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	2CBF1228D	MU01B		OP-02501(OPEN CC1409)	16
											2PBF1228B	MU01B		OP-02501(OPEN CC1409)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1176H		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13,16
											1CLR3757A		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13,16
											1CLR3757B		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13,16
											RC3704		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13,16
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1159B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2CBF1159C		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2CBF1159D		OP-02510 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2CBF1159H	LSLL/X1	OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2CLR3758A		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2CLR3758B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											2PBF1159A		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											EV1411B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											MV1411B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											NV1411B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
											RC3705		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,16
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	2CV1460D		MOD 88-0145	BYPASSING CC1460	43
											2CV1460E		MOD 88-0145	BYPASSING CC1460	43
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	21
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	2CV1469C		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	21
											2CV1469E		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	21
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,22
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	1CBE1161G	AC113	OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CBE1161I	2/X2	OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CBE1161J	LSLL/X1	OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CCCW001B		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CCCW001C		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CLR3757A		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											1CLR3757B		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
											RC3704		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	20
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	2CBF1161G	AD113	OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CBF1161I	2/X3	OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CBF1161J	LSLL/X2	OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CCCW002B		OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CCCW002C		OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CLR3758A		OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											2CLR3758B		OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
											RC3705		OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649)	20
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,22
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CBE1226B		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CBE1226F		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CBE1226I	2/X2	OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CBE1226J		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CCCW001B		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CCCW001C		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CLR3757A		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1CLR3757B		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											1PBE1226A		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
											RC3704		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	23
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	2CBF1106B		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CBF1106I	2/X3	OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CBF1106J	LSLL/X2	OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CCCW002B		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CCCW002C		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CLR3758A		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2CLR3758B		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											2PBF1106A		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
											RC3705		OP-02501 (OPEN CC5096)	OP-02501 (OPEN CC5096)	23
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	1CBE1227B		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CBE1227E		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CBE1227I	2/X2	OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CBE1227J		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CCCW001B		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CCCW001C		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CLR3757A		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1CLR3757B		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											1PBE1227A		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
											RC3704		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	23
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	2CBF1119B		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CBF1119I		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CBF1119J	LLSL/X2	OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CCCW002B		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CCCW002C		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CLR3758A		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2CLR3758B		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											2PBF1119A		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
											RC3705		OP-02501 (OPEN CC5098)	OP-02501 (OPEN CC5098)	23
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	1CD1P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	2CD2P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CD2P23D			ADEQUATE SEP FOR FIRE IN 123/124	10
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	1CD1P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	2CD2P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CD2P23D			ADEQUATE SEP FOR FIRE IN 123/124	10
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	1CD1P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	2CD2P23A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CD2P23D			ADEQUATE SEP FOR FIRE IN 123/124	10
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	1CAC113B			ADEQUATE SEP FOR FIRE IN 123/124	10,53
											1CAC113C			EMBEDDED CONDUIT	1*
											1CAC113D			EMBEDDED CONDUIT	1*
											1CAC113E			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC113H			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC113I			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CCCW001B			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CCCW001C			ADEQUATE SEP FOR FIRE IN 123/124	10
											1PAC113A			ADEQUATE SEP FOR FIRE IN 123/124	10
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	2CAD113B			ADEQUATE SEP FOR FIRE IN 123/124	10,53

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	2CAD113C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD113D			EMBEDDED CONDUIT	1*
											2CAD113E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD113H			EMBEDDED CONDUIT	1*
											2CAD113I			EMBEDDED CONDUIT	1*
											2CCW002B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CCW002C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PAD113A			EMBEDDED CONDUIT	1*
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	1CAC108B			POWER CABLE EMBEDDED	53
											1CAC108C			NOT REQUIRED FOR S/D	7
											1CAC108E			NOT REQUIRED FOR S/D	7
											1CAC108F	FTSH1484A		NOT REQUIRED FOR S/D	7
											1CAC108G	FIS1427C		NOT REQUIRED FOR S/D	7
											1CAC108H			NOT REQUIRED FOR S/D	7
											1CAC108I			NOT REQUIRED FOR S/D	7
											1CAC108K			NOT REQUIRED FOR S/D	7
											1CACD2C			NOT REQUIRED FOR S/D	7
											2CACD3C			NOT REQUIRED FOR S/D	7
											2CAD108B			POWER CABLE EMBEDDED	53
											2CAD108C			NOT REQUIRED FOR S/D	7
											2CAD108E			NOT REQUIRED FOR S/D	7
											2CAD108F			NOT REQUIRED FOR S/D	7
											2CAD108G			NOT REQUIRED FOR S/D	7
											2CAD108H			NOT REQUIRED FOR S/D	7
											2CAD108I			NOT REQUIRED FOR S/D	7
											2CAD108K			NOT REQUIRED FOR S/D	7
											3PACD1A			EMBEDDED CONDUIT	53
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	2CBF1120D		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	24
											2CVCF01AD		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	24
											2PBF1120B		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	24
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	24
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209C			EMBEDDED CONDUIT	1*
	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216E			EMBEDDED CONDUIT	1*
											1CCEAC1C			ADEQUATE SEP FOR FIRE IN 123/124	10
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147B			OP-02501 (TRIP P56-2)	13
											2CBF1147C			OP-02501 (TRIP P56-2)	13
											2CBF1147E			OP-02501 (TRIP P56-2)	13
											2CBF1147F			OP-02501 (TRIP P56-2)	13
											2PBF1147A			OP-02501 (TRIP P56-2)	13
											EV1531			OP-02501 (TRIP P56-2)	13
											MV1531			OP-02501 (TRIP P56-2)	13
											NV1531			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111B		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CSS	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111C		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111D		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111E		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111F		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1PBE111A		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	2CBF111D		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2CBF111F		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2CBF111G		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2PBF111A		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2PBF111J		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											EV1531		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											MP0562		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											NP0562		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	2CBF1136B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136F			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136H			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1136J			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1136A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1136			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
											EVDH01A			ADEQUATE SEP FOR FIRE IN 123/124	10
											MVDH01A			ADEQUATE SEP FOR FIRE IN 123/124	10
											NVDH01A			ADEQUATE SEP FOR FIRE IN 123/124	10
	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142B		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											2CBF1142E		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											2CBF1142F		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											2CBF1142G		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											2CBF1142H		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											2CBF1142K			DEPOWERED-SO NOT POSSIBLE	28
											2CBF1142L			DEPOWERED-SO NOT POSSIBLE	28
											2CBF1142M			DEPOWERED-SO NOT POSSIBLE	28
											2PBF1142A		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											BF1142		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
											CDF-11C		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	DEPOWERED - SO NOT POSSIBLE	28
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	2CBF1130D		OP-02501 (OPEN DH21 & 23)	OP-02501 (OPEN DH21 & 23)	39
											2CBF1130K		OP-02501 (OPEN DH21 & 23)	OP-02501 (OPEN DH21 & 23)	39
											2PBF1130B		OP-02501 (OPEN DH21 & 23)	OP-02501 (OPEN DH21 & 23)	39
											RC3702		OP-02501 (OPEN DH21 & 23)	OP-02501 (OPEN DH21 & 23)	39
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	OP-02501 (OPEN DH21 & 23)	39
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	2CVDH13AB			SPURIOUS OPENING NOT POSSIBLE	5C
											2CVDH13AG			SPURIOUS OPENING NOT POSSIBLE	5C
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	2CVDH14AB			ADEQUATE SEPERATION	10

LEGEND

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SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	2CVDH14AE			ADEQUATE SEPARATION	10
											2CVDH14AF			ADEQUATE SEPARATION	10
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	1CVDH14BF			SPURIOUS CLOSURE NOT POSSIBLE	5C
											RC3704			SPURIOUS CLOSURE NOT POSSIBLE	5C
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	1CBE1126D		OP-02501 (OPERATE DH1517)	OP-02501 (OPERATE DH1517)	51
											1CBE1126E		OP-02501 (OPERATE DH1517)	OP-02501 (OPERATE DH1517)	51
											1CBE1126F		OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
											1CBE1126G	MV2733	OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
											1PBE1126A		OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
											EV1517		OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
											MV1517		OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
											NV1517		OP-02501 (OPEN DH1517)	OP-02501 (OPEN DH1517)	51
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	2CBF1129B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1129C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1129D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1129E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1129F			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1129G	MV2734		ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1129A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1129			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
											EV1518			ADEQUATE SEP FOR FIRE IN 123/124	10
											MV1518			ADEQUATE SEP FOR FIRE IN 123/124	10
											NV1518			ADEQUATE SEP FOR FIRE IN 123/124	10
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	1CBE1121G	MV1517	OP-02501 (CLOSE DH2733)	OP-02501 (CLOSE DH2733)	52
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	2CBF1134B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1134C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1134D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1134G	MV1518		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1134H			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1134A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1134			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	2CBF1125B			DH2735 REMAINS CLOSED	29
											2CBF1125C			DH2735 REMAINS CLOSED	29
											2CBF1125D			DH2735 REMAINS CLOSED	29
											2PBF1125A			DH2735 REMAINS CLOSED	29
											EV2736			DH2735 REMAINS CLOSED	29
											MV2736			DH2735 REMAINS CLOSED	29
											NV2736			DH2735 REMAINS CLOSED	29
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	2CBF1195B			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											2CBF1195C			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											2CBF1195E			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											2PBF1195A			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											EVDH63			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											MVDH63			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											NVDH63			ADEQUATE SEP FOR FIRE IN 123/124	10,11
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112B		OP-02501 (TRIP P42-1)	ADEQUATE SEP FOR FIRE IN 123/124	10,53
											1CAC112C		OP-02501 (TRIP P42-1)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											1CAC112E		MOD 84-0171	3HR WRAP 36008B	3,13
											1CAC112F		OP-02501 (TRIP P42-1)	ADEQUATE SEP FOR FIRE IN 123/124	10,13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1PAC112A		MOD 84-0171	3HR WRAP 36009B	3,13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	2CAD112B		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,53
											2CAD112C		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											2CAD112E		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											2CAD112F		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											2PAD112A		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											MP0422		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											NP0422		OP-02501 (TRIP P42-2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	1CGD104B			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD104C			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD104E			ADEQUATE SEP FOR FIRE IN 123/124	10
	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	2CGD204B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD204C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD204E			ADEQUATE SEP FOR FIRE IN 123/124	10
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	1CGD101L			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD101N			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD103E			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD103F			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD105A			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CGD106A			ADEQUATE SEP FOR FIRE IN 123/124	10
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	2CGD201L			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD201N			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD205A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD206A			ADEQUATE SEP FOR FIRE IN 123/124	10
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	BCHBBDA			NOT REQUIRED FOR S/D	7
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	1CABDC1C 1CABDC1L 1CAC101C 1CAC101D 1CAC1033A 1CAC1033B 1CAC103A			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10,53 10 10 10 10 10
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	1CAC110C			ADEQUATE SEP FOR FIRE IN 123/124	10
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	1CY108AA			ADEQUATE SEP FOR FIRE IN 123/124	10
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5708	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			EMBEDDED CONDUIT	1*
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			EMBEDDED CONDUIT	1*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	1CY112A 1CY116A			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	1CY115B			SFRCS ACTUATED - LOSS OF POWER	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	1CY121A 1CY121B 1PD1P11A			SFRCS ACTUATED - LOSS OF POWER SFRCS ACTUATED - LOSS OF POWER SFRCS ACTUATED - LOSS OF POWER	14 14 14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	1CD1P18A			SFAS ACTUATED - LOSS OF POWER	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATED - LOSS OF POWER	13
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY106A			EMBEDDED CONDUIT	1*
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY1A105A			EMBEDDED CONDUIT	1*
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CD1P19A 3CY307A			SFAS ACTUATED - LOSS OF POWER SFAS ACTUATED - LOSS OF POWER	13 13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			SFRCS ACTUATED - LOSS OF POWER	14
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY107AA 1CY109AA			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	1CY117A 1CY117B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	2CY214A 2CY214B 2CY214C			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D 5D
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	2CD2P20B			ADEQUATE SEP FOR FIRE IN 123/124	10

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	2CD2P20D			ADEQUATE SEP FOR FIRE IN 123/124	10
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	2CAACD1C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAACD1L			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD101C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD101D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD1033A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD1033B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD103A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD203E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CGD203F			ADEQUATE SEP FOR FIRE IN 123/124	10
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	2CAD110C			ADEQUATE SEP FOR FIRE IN 123/124	10
											BCABDD2C			ADEQUATE SEP FOR FIRE IN 123/124	10
											BCABDD2H			ADEQUATE SEP FOR FIRE IN 123/124	10
											BCAD2031A			NOT REQUIRED FOR S/D	7,53
											BCAD2032A			ADEQUATE SEP FOR FIRE IN 123/124	10
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	1PBE1190A			NOT REQUIRED FOR S/D	7
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	2PBF1187A			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	1CAC11CED			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC11CEF			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC12CED			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC12CEF			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CBCE11B			EMBEDDED CONDUIT	1*
											1CBCE12B			EMBEDDED CONDUIT	1*
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	1PBE107A		MOD 85-0063	EMBEDDED CONDUIT	6**1*
											1PBE107B		MOD 85-0063	EMBEDDED CONDUIT	6**1*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	1PBE1234A		MOD 85-0187	1HR WRAP 18219A	1,25
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	2CAD11DFD 2CAD11DFF 2CAD12DFD 2CAD12DFF			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10 10
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	2PBF1143A F11C		MOD 85-0063 MOD 85-0063	ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	6**10 6**10
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	2PBF1146A			NOT REQUIRED FOR S/D	11
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	2PBF1189A			NOT REQUIRED FOR S/D	11
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	BCAD2DF7D BCAD2DF7F			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	BCYBU41A			ADEQUATE SEP FOR FIRE IN 123/124	10

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B 1CD1P21C			SFRCS INITIATES SFRCS INITIATES SFRCS INITIATES	14 14 14
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	2CD2P21A 2CD2P21B			SFRCS INITIATES SFRCS INITIATES	14 14
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B 1CD1P21C			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D 5D
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	2CD2P21A 2CD2P21B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B 1CD1P21C			OP-02501 (OPERATE ICS038B) OP-02501 (OPERATE ICS038B) OP-02501 (OPERATE ICS038B)	17 17 17
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	2CD2P21A 2CD2P21B			OP-02501 (OPERATE ICS038B) OP-02501 (OPERATE ICS038B)	17 17
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	2CY216A 2CY216B 2CY216C			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D 5D
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	ACDAP28A ACDAP28B			POWER SUPPLY NOT REQUIRED POWER SUPPLY NOT REQUIRED	5D 5D
	RC3716										BCYBU43A BCYBU43B RC3718			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	45 45 45
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

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FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			LOST DUE TO BREAKER COORDINATION	38
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			LOST DUE TO BREAKER COORDINATION	38
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	2CD2P13C			OP-02501 (OPERATE ICS038A)	17
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	2CD2P10C			NOT REQUIRED FOR S/D	7
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	2CBF1139B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1139C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1139D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1139E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1139F			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1139G			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1139A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1139			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
											EVHP02A			ADEQUATE SEP FOR FIRE IN 123/124	10
											MVHP02A			ADEQUATE SEP FOR FIRE IN 123/124	10
											NVHP02A			ADEQUATE SEP FOR FIRE IN 123/124	10
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	2CBF1141B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1141C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1141D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1141E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1141F			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1141G			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1141A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1141			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
											EVHP02B			ADEQUATE SEP FOR FIRE IN 123/124	10
											MVHP02B			ADEQUATE SEP FOR FIRE IN 123/124	10
											NVHP02B			ADEQUATE SEP FOR FIRE IN 123/124	10
	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE		OP-02501 (OVERIDE SFAS)	SFAS ACTUATES	13
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE		OP-02501 (OVERIDES SFAS)	SFAS ACTUATES	13
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	2CBF1194B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1194C			ADEQUATE SEP FOR FIRE IN 123/124	10

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HPIS	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	2CBF1194E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1194G			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1194A			ADEQUATE SEP FOR FIRE IN 123/124	10,11
											EVHP31			ADEQUATE SEP FOR FIRE IN 123/124	10
											MVHP31			ADEQUATE SEP FOR FIRE IN 123/124	10
											NVHP31			ADEQUATE SEP FOR FIRE IN 123/124	10
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	1CBE1296C			ADEQUATE SEP FOR FIRE IN 123/124	10
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	1CD106B			EMBEDDED CONDUIT	1*
											1CD106D			EMBEDDED CONDUIT	1*
											1PD106A			EMBEDDED CONDUIT	1*
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	2CBF1231B			MUPS TRAIN 2 USED FOR S/D	7
											2PBF1231A			MUPS TRAIN 2 USED FOR S/D	7
											2PBF1231D			MUPS TRAIN 2 USED FOR S/D	7
											JT1715			MUPS TRAIN 2 USED FOR S/D	7
											MP1981			MUPS TRAIN 2 USED FOR S/D	7
											NP1981			MUPS TRAIN 2 USED FOR S/D	7
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	2CD206B			MUPS TRAIN 2 USED FOR S/D	7
											2CD206D	FPDS4961		MUPS TRAIN 2 USED FOR S/D	7
											2PD206A			MUPS TRAIN 2 USED FOR S/D	7
											FPDS4961			MUPS TRAIN 2 USED FOR S/D	7
											MP1982			MUPS TRAIN 2 USED FOR S/D	7
											NP1982			MUPS TRAIN 2 USED FOR S/D	7
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	1CAC111B		OP-02501 (TRIP P58-1 S/D TRN 2)	ADEQUATE SEP FOR FIRE IN 123/124	10,53
											1CAC111C		OP-02501 (TRIP P58-1 S/D TRN 2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											1CAC111E		OP-02501 (TRIP P58-1 S/D TRN 2)	3HR WRAP 36006B	3,10
											1CAC111F		OP-02501 (TRIP P58-1 S/D TRN 2)	ADEQUATE SEP FOR FIRE IN 123/124	10,13
											1PAC111A		OP-02501 (TRIP P58-1 S/D TRN 2)	3HR WRAP 36007B	3,10
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	2CAD111B		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13,53
											2CAD111C		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
											2CAD111E		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
											2CAD111F		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
											2PAD111A		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
											MP0582		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
											NP0582		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	
	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	1CBE1217E			ADEQUATE SEP FOR FIRE IN 123/124	10
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	2PBF1205A			ADEQUATE SEP FOR FIRE IN 123/124	10
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	1CBE1240E			EMBEDDED CONDUIT	1*
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	1CBE1241E			EMBEDDED CONDUIT	1*
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	12
	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE		OP-02501 (OPEN HP26)	OP-02501 (OPEN HP26)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1237D	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											2CBF1237G	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											2PBF1237B	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1238D	CC1410		OP-02501 (OPEN MU01A)	16
											2CBF1238G	CC1410		OP-02501 (OPEN MU01A)	16
											2PBF1238B	CC1410		OP-02501 (OPEN MU01A)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,16
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	2CSF1744A		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13,16
											2CSF1744B	PSLLMU03	OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13,16
											RC3703		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13,16
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	ACBE2259C		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	ACBE2262C		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2263C		OP-02501 (OPEN MU10B)	OP-02501 (OPEN MU10B)	16
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	ACBE2278C		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
											ACBE2278I	FYIC-MU39	OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
											ACBE2278L		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BCY36218A			OP-02519 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2271C			NOT REQUIRED FOR S/D	7

LEGEND

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SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU203)	OP-02501 (CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	BCY36217A BLCOF532A			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13,16
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	2CBF1617E 2PBF1617D		OP-02501 (ALIGN TO BWST) OP-02501 (ALIGN TO BWST)	OP-02501 (ALIGN TO BWST) OP-02501 (ALIGN TO BWST)	16 16
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	16,13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	16,13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	16,13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	16,13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	2CV6406C 2CV6406D			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1208C 2PBF1208F			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	2CBF1616C 2PBF1616F			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1108C 2CBF1108D 2CBF1108F 2PBF1108E EV6422 MV6422 NV6422			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10 10 10 10 10
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1748A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13,16
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13,16
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13,16
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1749A	KA,KB	OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13,16
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NOT REQUIRED FOR S/D	7
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	ACD117H			NOT REQUIRED FOR S/D	7

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	ACD117I			NOT REQUIRED FOR S/D	7
											ACD117J			NOT REQUIRED FOR S/D	7
											ACD117K			NOT REQUIRED FOR S/D	7
											APD117A			NOT REQUIRED FOR S/D	7
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACBE1192G	D117		NOT REQUIRED FOR S/D	7
											ACBE1192I	AC105		NOT REQUIRED FOR S/D	7
											ACBE1192L			NOT REQUIRED FOR S/D	7
											ACBE1192M			NOT REQUIRED FOR S/D	7
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1167B			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1167C	RX-2,RX-11-2		ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1167D			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BF1167			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BPBF1167A			ADEQUATE SEP FOR FIRE IN 123/124	10,16
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	BCD217E			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCD217G	AD105		ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BF1167			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BPD217A			ADEQUATE SEP FOR FIRE IN 123/124	10,16
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1168B			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1168C			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1168D			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1168E	BF1167		ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCBF1168I	AD105		ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BF1167			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BF1168			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BPBF1168A			ADEQUATE SEP FOR FIRE IN 123/124	10,16
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	1PAC105A			NOT REQUIRED FOR S/D	7
											ACAC105E			NOT REQUIRED FOR S/D	7
											ACAC105F	PS3MU105B		NOT REQUIRED FOR S/D	7
											ACAC105L			NOT REQUIRED FOR S/D	7
											ACAC105M			NOT REQUIRED FOR S/D	7
											ACAC105N			NOT REQUIRED FOR S/D	7
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	2PAD105A			EMBEDDED CONDUIT	1*
											BCAD105B			ADEQUATE SEP FOR FIRE IN 123/124	10,53
											BCAD105C			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCAD105E			EMBEDDED CONDUIT	1*
											BCAD105F			EMBEDDED CONDUIT	1*
											BCAD105G			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCAD105H			ADEQUATE SEP FOR FIRE IN 123/124	10,16
											BCAD105K	MV3971		ADEQUATE SEP FOR FIRE IN 123/124	10,16
	T15-1	CLEAN WASTE RECEIVER TANK 1-1	TANK	A	1/2	FUNC	FUNC	N/A	T15-2	H	NONE			LOW COMBUSTIBLES	32
	T15-2	CLEAN WASTE RECEIVER TANK 1-2	TANK	A	1/2	FUNC	FUNC	N/A	T15-1	H	NONE			LOW COMBUSTIBLES	32
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	ACV1453C		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	33
											C1702		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	33
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743A		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743B		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743C		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743D		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743E		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743F		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743G		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											C1702		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											EV1751		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											FLSHH1746		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											NV1743		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											RC1760		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											SV1743		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	BCV1747A		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747B		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747C		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747D		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747E		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747F		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											BCV1747G		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											C1702		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											EV1752		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											FLSHH1748		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											NV1747		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											RC1761		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
											SV1747		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	2LNF5875B			ADEQUATE SEPARATION EXISTS	10
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	2LRPSA03X			ADEQUATE SEPARATION EXISTS	10
											2LRPSA03Y			ADEQUATE SEPARATION EXISTS	10
											2LRPSA03Z			ADEQUATE SEPARATION EXISTS	10
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU31A			ADEQUATE SEP FOR FIRE IN 123/124	10
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU34A			ADEQUATE SEP FOR FIRE IN 123/124	10
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	2LHP03AA			NOT REQUIRED - USE MUPS	16
											2LHP03AB			NOT REQUIRED - USE MUPS	16
											LFTHP03A			NOT REQUIRED - USE MUPS	16
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	2LHP03AA			NOT REQUIRED - USE MUPS	16
											LFTHP03A			NOT REQUIRED - USE MUPS	16
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	2LHP03BA			NOT REQUIRED - USE MUPS	16
											2LHP03BB			NOT REQUIRED - USE MUPS	16
											LFTHP03B			NOT REQUIRED - USE MUPS	16
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	2LHP03BA			NOT REQUIRED - USE MUPS	16
											LFTHP03B			NOT REQUIRED - USE MUPS	16
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03CA		OP-02501 MONITOR PZR LVL	OP-02501 MONITOR PRZ LVL	27
											1LHP03CB		OP-02501 MONITOR PZR LVL	OP-02501 MONITOR PRZ LVL	27
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	1LHP03CA		OP-02501 MONITOR PZR LVL	OP-02501 MONITOR PRZ LVL	27

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03DA 1LHP03DB		OP-02501 MONITOR PZR LVL OP-02501 MONITOR PZR LVL	OP-02501 MONITOR PRZ LVL OP-02501 MONITOR PRZ LVL	27 27
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	1LHP03DA		OP-02501 MONITOR PZR LVL	OP-02501 MONITOR PRZ LVL	27
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	1LRC143B			WRAP LRS-RC14	35
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	2LRC141B 2LRC141Y			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LRC143B 1LRC143C			WRAP LRS-RC14 WRAP LRS-RC14	35 35
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	2LRC141B 2LRC141C 2LRC141Y			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	2LSP09A3B 2LSP09A3C 2LSP09A3Z			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	2LSP09A3B 2LSP09A3Z			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT21C			ADEQUATE SEP FOR FIRE IN 123/124	10
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT21C			ADEQUATE SEP FOR FIRE IN 123/124	10
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT41C			ADEQUATE SEP FOR FIRE IN 123/124	10
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LSP09B3B 1LSP09B3C			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	1LSP09B3B			ADEQUATE SEP FOR FIRE IN 123/124	10
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	BLNNI153D			3HR WRAP PBL4E	35
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	2LP6365AB			ADEQUATE SEP FOR FIRE IN 123/124	10
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	2LP6365AB			ADEQUATE SEP FOR FIRE IN 123/124	10
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	1LP6365BA 1LP6365BD			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	1LP6365BA			NOT REQUIRED FOR S/D	7
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	4LSFPT41A 4LSFPT41B P4L1GX			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	2LSFPT21B			ADEQUATE SEP FOR FIRE IN 123/124	10
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	2LSP12A2A 2LSP12A2B 2LSP12A2Z			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10 10
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	2LSP12A2A			ADEQUATE SEP FOR FIRE IN 123/124	10

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	2LSP12A2Z			ADEQUATE SEP FOR FIRE IN 123/124	10
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	ALNNI852G			ADEQUATE SEP FOR FIRE IN 123/124	10
											ALNNI852T			ADEQUATE SEP FOR FIRE IN 123/124	10
											PAL3DX			ADEQUATE SEP FOR FIRE IN 123/124	10
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSP12B1A			OP-02501 (USE PI-SP12B2)	26
											1LSP12B1B			OP-02501 (USE PI-SP12B2)	26
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	1LSP12B1A			OP-02501 (USE PI-SP12B2)	26
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE		OP-02501 (USE PI-SP12B2)	OP-02501 (USE PI-SP12B2)	26
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	BLNNI154Y			ADEQUATE SEP FOR FIRE IN 123/124	10
											PBLIEX			ADEQUATE SEP FOR FIRE IN 123/124	10
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	2LRPSA07B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2LRPSA07Z			ADEQUATE SEP FOR FIRE IN 123/124	10
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	2LTRC3A6A			ADEQUATE SEP FOR FIRE IN 123/124	10
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	1LRPSB07B			NOT REQUIRED FOR S/D	7
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	2LTRC3B6A		OP-02501 (USE TI-RC3B5)	OP-02501 (USE TI-RC3B5)	36
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	BLNNI154B			ADEQUATE SEP FOR FIRE IN 123/124	10
											BLNNI154F			ADEQUATE SEP FOR FIRE IN 123/124	10
											BLNNI154Y			ADEQUATE SEP FOR FIRE IN 123/124	10
											C3712			ADEQUATE SEP FOR FIRE IN 123/124	10
											PBL1EX			ADEQUATE SEP FOR FIRE IN 123/124	10
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	ALNNI833A			ADEQUATE SEP FOR FIRE IN 123/124	10
											ALNNI833Z			ADEQUATE SEP FOR FIRE IN 123/124	10
											PAL3DX			ADEQUATE SEP FOR FIRE IN 123/124	10
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285N			3HR WRAP P2C5G	3,47
											2PBF1285M			SPURIOUS OPENING NOT POSSIBLE	3,47
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126D			3HR WRAP P2C5G	3,47
											2CBF1126H			FLOW PATH REMAINS CLOSED	3,47

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2PBF1126B C1708			FLOW PATH REMAINS CLOSED FLOW PATH REMAINS CLOSED	3,47 3,47
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127D 2CBF1127G 2PBF1127B C1708			3HR WRAP P2C5G FLOW PATH REMAINS CLOSED FLOW PATH REMAINS CLOSED FLOW PATH REMAINS CLOSED	3,47 3,47 3,47 3,47
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2K 2CVRC2N			3HR WRAP P2C5G 3HR WRAP P2C5G	44 44
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	1CV4608AA 1CV4608AC P1P3BX			RC4608B REMAINS CLOSED RC4608B REMAINS CLOSED RC4608B REMAINS CLOSED	46 46 46
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	2CV4610AA			RC4610B REMAINS CLOSED	48
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	2CV4610BA			RC4610A REMAINS CLOSED	48
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632B 2CV4632D C1708			FLOW PATH REMAINS CLOSED FLOW PATH REMAINS CLOSED FLOW PATH REMAINS CLOSED	47 47 47
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			EMBEDDED CONDUIT	1*
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	3CY307A			EMBEDDED CONDUIT	1*
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	1CLY6453A 1CLY6453B			OP-02501 (OPERATE ICS038B) OP-02501 (OPERATE ICS038B)	17 17
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	2CLY6454A 2CLY6454B			OP-02501 (OPERATE ICS038A) OP-02501 (OPERATE ICS038A)	17 17
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	4LSFPT42A			EMBEDDED CONDUIT	1*,13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21C			LI-SP09A1 REMAINS AVAILABLE	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41C			LI-SP09A1 REMAINS AVAILABLE	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21D			LI-SP09A1 REMAINS AVAILABLE	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41D			LI-SP09A1 REMAINS AVAILABLE	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			LI-SP09B1 REMAINS AVAILABLE	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			LI-SP09B1 REMAINS AVAILABLE	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD21B			SFRCS ACTUATES	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD41B			SFRCS ACTUATES	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD11C			SFRCS ACTUATES	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD31C			SFRCS ACTUATES	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD21C			SFRCS ACTUATES	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM11B			ACTUATION ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM21B			ACTUATION ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM31B			ACTUATION OF LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM41B			ACTUATION ON LOOP	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : A

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107B			ADEQUATE SEP FOR FIRE IN 123/124	10,53
											1CAC107C			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC107F			ADEQUATE SEP FOR FIRE IN 123/124	10
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	2CAD107B			ADEQUATE SEP FOR FIRE IN 123/124	10,53
											2CAD107C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD107F			ADEQUATE SEP FOR FIRE IN 123/124	10
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	1CAC109B			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC109C			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CAC109D			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CACD4E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CACD5E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD109B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD109C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CAD109D			ADEQUATE SEP FOR FIRE IN 123/124	10
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	1CV1356B		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											1CV1356C		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											1CV1356D		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											1CV1356E		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											1CV1356F		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											NV1356		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											RC3701		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
											SV1356B		OP-02501 (OPEN SW1356)	OP-02501 (OPEN SW1356)	37
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	2CV1357B		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											2CV1357C		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											2CV1357D		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											2CV1357E	BF1401	OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											2CV1357F		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											NV1357		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											RC3702		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
											SV1357B		OP-02501 (OPEN SW1357)	OP-02501 (OPEN SW1357)	37
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	1CV1358AG			SW325 REMAINS CLOSED	37
											1CV1358AH			SW325 REMAINS CLOSED	37
											1CV1358AI			SW325 REMAINS CLOSED	37
											1CV1358AJ			SW325 REMAINS CLOSED	37
											1CV1358AK			SW325 REMAINS CLOSED	37
											1CV1358AL			SW325 REMAINS CLOSED	37
											2CV1358BG	BF1501		SW325 REMAINS CLOSED	37
											2CV1358BH			SW325 REMAINS CLOSED	37
											2CV1358BI			SW325 REMAINS CLOSED	37
											2CV1358BJ			SW325 REMAINS CLOSED	37
											2CV1358BK			SW325 REMAINS CLOSED	37
											2CV1358BL			SW325 REMAINS CLOSED	37
											3CV1358AB			SW325 REMAINS CLOSED	37
											3CV1358AD			SW325 REMAINS CLOSED	37
											3CV1358AE			SW325 REMAINS CLOSED	37
											NV1358			SW325 REMAINS CLOSED	37
											NV1358A			SW325 REMAINS CLOSED	37
											NV1358B			SW325 REMAINS CLOSED	37
											RC3701			SW325 REMAINS CLOSED	37
											RC3702			SW325 REMAINS CLOSED	37
											SV1358B			SW325 REMAINS CLOSED	37
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	1CBE1142B		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											1CBE1142C		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											1CBE1142D		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											1CBE1142G		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	1PBE1142A		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											EV1366		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											MV1366		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
											NV1366		OP-02501 (OPEN SW1366)	OP-02501 (OPEN SW1366)	37
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	2CBF1223B		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											2CBF1223C		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											2CBF1223D		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											2PBF1223A		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											EV1367		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											MV1367		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
											NV1367		OP-02501 (OPEN SW1367)	OP-02501 (OPEN SW1367)	37
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	1CBE1207E			SW325 REMAINS CLOSED	37
											1CBE1207F			SW325 REMAINS CLOSED	37
											1CBE1207G			SW325 REMAINS CLOSED	37
											1CBE1207J			SW325 REMAINS CLOSED	37
											2CBF1224B			SW325 REMAINS CLOSED	37
											2CBF1224F			SW325 REMAINS CLOSED	37
											2CBF1224G			SW325 REMAINS CLOSED	37
											2CBF1224J			SW325 REMAINS CLOSED	37
											3PBE1207H			SW325 REMAINS CLOSED	37
											MV1368			SW325 REMAINS CLOSED	37
											NV1368A			SW325 REMAINS CLOSED	37
											NV1368B			SW325 REMAINS CLOSED	37
											RC3701			SW325 REMAINS CLOSED	37
											RC3702			SW325 REMAINS CLOSED	37
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	1CBE1218F			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CBE1218H			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CBE1218I			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CPS4928C	PSL4928A		ADEQUATE SEP FOR FIRE IN 123/124	10
											1CPS4928D	PSL4928B		ADEQUATE SEP FOR FIRE IN 123/124	10
											1CPS4928E			ADEQUATE SEP FOR FIRE IN 123/124	10
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	2CBF1177B			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177C			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177D			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177F			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177G			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177H			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1177I			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CPS4929C	PSL4929A		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CPS4929D	PSL4929B		ADEQUATE SEP FOR FIRE IN 123/124	10
											2CPS4929E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CSD04A			ADEQUATE SEP FOR FIRE IN 123/124	10
											2PBF1177A			ADEQUATE SEP FOR FIRE IN 123/124	10
											BF1177			ADEQUATE SEP FOR FIRE IN 123/124	10
											CDF-11C			ADEQUATE SEP FOR FIRE IN 123/124	10
											EV1383			ADEQUATE SEP FOR FIRE IN 123/124	10
											MV1383			ADEQUATE SEP FOR FIRE IN 123/124	10
											NV1383			ADEQUATE SEP FOR FIRE IN 123/124	10
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	2CBF1277E			ADEQUATE SEP FOR FIRE IN 123/124	10
											2CBF1277G			ADEQUATE SEP FOR FIRE IN 123/124	10
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277E			ADEQUATE SEP FOR FIRE IN 123/124	10
											1CBE1277G			ADEQUATE SEP FOR FIRE IN 123/124	10
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	1CV1424D			EMBEDDED CONDUIT	1*
											1CV1424G			EMBEDDED CONDUIT	1*
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	1CV1429B			VALVE FAILS OPEN	5C

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	2CV1429B 2CV1429C 3CV1429A 3CV1429B			VALVE FAILS OPEN VALVE FAILS OPEN VALVE FAILS OPEN VALVE FAILS OPEN	5C 5C 5C 5C
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	2CV1434D 2CV1434G			ADEQUATE SEP FOR FIRE IN 123/124 ADEQUATE SEP FOR FIRE IN 123/124	10 10
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232F			EMBEDDED CONDUIT	1*
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	1CBE1281F			ONE VALVE IS NO & DEPOWERED	49
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	2CBF1281F			ONE VALVE IS NO & DEPOWERED	49
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	1CBE1282F			ONE VALVE IS NO & DEPOWERED	49
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	2CBF1282F			ONE VALVE IS NO & DEPOWERED	49
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MV0830	DHR CLR 2 OUT XOVER									2PBF1185A	F11D		NOT REQUIRED FOR SSD	11
ASSCKT	MV1567B	CC IN ISO VALVE 2 TO CRD									2PBF1176A	F11B		WILL NOT RESULT IN LOST MCC	6*
ASSCKT	MV2012B	CTMT NORM SUMP ISO VLV									2PBF1138A	F11B		WIIL NOT RESULT IN LOST MCC	6*
ASSCKT	MV5441	ECCS RM 115 HVAC ISO VLV									2PBF1178A	F11D		NOT REQUIRED FOR S/D	11
ASSCKT	MV5442	ECCS RM 115 HVAC ISO VLV									2PBF1179A	F11D		NOT REQUIRED FOR S/D	11
ASSCKT	C31-1	ECCS RM 115 CLR FAN 1									2PBF1192A	F11E		NOT REQUIRED FOR S/D	11
ASSCKT	C31-2	ECCS RM 115 CLR FAN 2									2PBF1193A	F11E		NOT REQUIRED FOR S/D	11
ASSCKT	C5763F	RPS-3 CABINET									3CY308A			NOT REQUIRED FOR S/D	7
ASSCKT	CFP05Q	BWST HEAT TRACING									3CY310A			NOT REQUIRED FOR S/D	7
ASSCKT	C5784C	ARTS CABINET									3CY312A			NOT REQUIRED FOR S/D	7
ASSCKT	C5760A	CTRM CABINET									3CY313A			NOT REQUIRED FOR S/D	7
ASSCKT	MV5011E	CTMT AIR SMPL RET ISO VLV									1PYE205A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MC5000A	EMER VNT SYS MOD DMPR 1									1PYE206A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MC5000B	EMER VNT SYS MOD DMPR 2									1PYE207A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MV5010A	CTMT AIR SMPL ISO VLV									2PYF201A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MV5010B	CTMT AIR SMPL ISO VLV									2PYF202A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MV5010C	CTMT AIR SMPL ISO VLV									2PYF203A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MV5010D	CTMT AIR SMPL ISO VLV									2PYF204A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MV5010E	CTMT AIR SMPL ISO VLV									2PYF205A			LOST DUE TO BREAKER COORDINATION	38

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : A
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ASSCKT	HV5444A	CCWP RM FAN 2 BYPASS DMPR									2PYF209A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	HV5444B	CCWP RM FAN 2 IN DMPR									2PYF210A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	HV5444C	CCWP RM OA LOUVER 2									2PYF212A			LOST DUE TO BREAKER COORDINATION	38
ASSCKT	MS611	MV0611 PWR CKT									1PBE1294H			WILL NOT RESULT IN LOST MCC	6*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA A TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates that High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground. Additionally coordination for the following 480V AC MCC's is provided:

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA A TABLE 1 NOTES

9. NOT USED

10. An exemption is requested from the provisions of Appendix R Section III.G for not having complete enclosure by a 3-hour barrier. Train 1 cables run along the east wall of 124 into 123 in Cable Trays and the conduits they enter before going embedded in Room 123. Also, Conduits which run along the south wall of 124, the north wall of 123 and the east wall of 124 are separated from Train 2 Raceways (Cable Trays which are located in the northwest corner of Room 124 and the other rooms of Fire Area A) by over 20 ft. with negligible intervening combustibles.

11. MCC F11E may trip due to a lack of coordination in associated circuit breakers. The only Safe Shutdown equipment affected by loss of MCC F11E are HPI Pump 2 Recirc Valve (HP31) (not used) and LPI/HPI Crosstie Valve (DH63) (fail as-is). Safe Shutdown can be achieved in this fire area in spite of the loss of these components.

    MCC F11D may trip due to a lack of coordination in associated circuit breakers. The only Safe Shutdown equipment affected by loss of MCC F11D are CCW Return HDR 2 Valve (CC2649) and 125V DC Battery Charger (DBC2PN). CC2649 will be manually operated and DBC2PN is not required for Safe Shutdown.

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle
WC1743	Open
WC1747	Open

    CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

    At least 30-minutes are available to complete the manual action.

FIRE AREA A TABLE 1 NOTES

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. SFAS also provides a level signal for the AFWS level control but either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost.

Due to loss of power to Complimentary Channels, SFAS actuation could operate the following components:

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1, -2	LPI Pump 1, 2	On	Trip Bkr AC112 at C1 & Bkr AD112 at D1
P56-1, -2	CS Pump 1, 2	On	Trip Bkr BE111 at E1 & Bkr BF111 at F1
P58-1, -2	HPI Pump 1, 2	On	Trip Bkr AC111 at C1 & AD111 at D1*
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
HP02C, D	HPI 1 Disch Vlv	Open	Operate from CR after Blocking SFAS (Trn 1 S/D only)
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip Bkr BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip Bkr BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip Bkr BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip Bkr BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip Bkr BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

* Don’t trip Breaker AC111 which stops P58-1 when shutting down using Train 1.

FIRE AREA A TABLE 1 NOTES

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

15. The AFW Pump Discharge Cross-Connect Valves AF3869, AF3871 are normally closed. These valves could spuriously open thereby diverting feedwater to the opposite non-accredited S/G. The AFW Pump capacities are sufficient for one pump to feed both S/G's. However, to avoid overfilling the idle S/G, close the cross-connect valves. Trip Breaker BE1146 at E11E and close AF3869 for Train 1 Shutdown. Trip Breaker BF1201 at F12A and close AF3871 for Train 2 Shutdown.

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return Flow

    The following manual valves will need to be operated:

MU97	Open	WC119	Open
MU182	Close	WC120	Open

    Additionally, the following valves may need to be manually operated:

MU10A	Open MU10A & Trip Bkr BE2262 at E22B	MU59A	Open*
MU10B	Open MU10B & Trip Bkr BE2263 at E22B	MU59B	Open*
MU11	Direct Flow to CWRT & Trip Bkr BE2278 at E22B	MU59C	Open*
		MU59D	Open*
MU38	Open		

FIRE AREA A TABLE 1 NOTES

RCP Seal Injection (See RCS Inventory Control for supply)

The following valves may have to be operated:

MU66A	Open	MU66D	Open
MU66B	Open	MU214	Close
MU66C	Open	MU216	Throttle

RCS Letdown

The following valves may have to be operated:

CC1409	Open CC1409 & Trip Bkr BF1227 at F12A	CC1407A	Open*
		CC1407B	Open*
MU01A	Open MU01A & Trip Bkr BF1237 at F12A	CC1411A	Open*
		CC1411B	Open*
MU04	Open MU04 & Trip Bkr BE2259 at E22B	MU02A	Open*
		MU02B	Open
		MU03	Open

* See Note 13 for breaker to be tripped

RCS Inventory Control

For Train 1 Shutdown, HPIS Train 1 will be used. The following manual valves will need to be operated: (After 8-Hours)

MU208	Open	HP26	Open

For Train 2 Shutdown, Makeup Train 2 will be used. The following manual valves will need to be operated to transfer MU Recirc to the BWST after aligning MU3971 to the BWST:

MU208	Open HP1556	Open
HP29	Open MU203	Closed (after other valves opened)

17. The AFWP flow Control Valves AF6451 and AF6452 are normally open and required to be throttled for Safe Shutdown. A review of the circuits indicates loss of control of these valves. Therefore: for Train 1, fail open AF6452 by depowering the valve at D1P Breaker D1P13 and use ICS038B for SG1 level control. For Train 2, fail open AF6451 by depowering the valve at D2P Breaker D2P13 and use ICS038A for SG2 level control.

18. The AFPT Main Steam Cross-Connect Valves MS106A and MS107A are normally open to provide a steam supply to the opposite train AFW Pump. Since either one of the S/G's could be without level indication and overfilling an S/G could result in damage to the AFW Turbines. If required, for Train 1 Shutdown, trip P14-2 and for Train 2 Shutdown, trip P14-1.

19. The AFPT Main Steam Inlet Valve is normally closed and is required to be open for Safe Shutdown. A review of the circuit in the fire area shows that a fire in this area could prevent the opening of MS106. Therefore, trip Breaker D135 at D1NA and open MS106.

FIRE AREA A TABLE 1 NOTES

20. The CCW Return Header Valves CC2645 and CC2649 are normally open and required to be open to provide cooling to the Seal Return Cooler. For Train 1, open Breaker BE1161 at E11D and open/verify open CC2645. For Train 2, open Breaker BF1161 at F11D open/verify open CC2645 (after 8-hours).

21. The DHR Cooler Isolation Valves CC1467 and CC1469 are normally closed. These valves fail open on loss of air. However, these valves are required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS Cooldown. Before opening CC43, verify CC1467 for Train 1 and CC1469 for Train 2 is closed. When entering DHRS Cooldown, open CC1467 or CC1469 after CC43 is closed.

22. The CCW to Nonessential Inlet Iso Valve CC1495 is normally open. Manual Bypass Valve CC43 will be opened. However, to preclude CCW Pump runout, CC43 has to be closed before CC1467 or CC1469 is open (CCW to DHRS Cooler for Cooldown).

23. One Train of the CCW Line Inlet and Return Isolation Valves CC5095, CC5096, CC5098 and CC5097 is normally open and required to be open to provide cooling for the Letdown Coolers. A review of the circuits indicates that spurious closure is possible. Trip Breakers BE1226 & BE1227 at E12A and open CC5095 and CC5097 for Train 1. Trip Breakers BF1106 & BF1119 at F11A and open CC5096 and CC5098 for Train 2.

24. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A, CF01B before going below 700 psig.

25. Circuit 1PBE1234A provides 480V AC power to MCC E12E which, in turn, supplies the ECCS Room Cooler Fans C31-4 and C31-5, MCC E12E also feeds the HPI Pump 1-1 AC Lube Oil Pump P197-1, the SG 1 Drain Valve MS611, and the HP1 Pump 1-1 Recirculation Line Isolation Valve HP32. Therefore, Circuit 1PBE1234A is to be protected with a 1-hour barrier to preclude the loss of power at MCC E12E.

26. PI-SP12B2 (SG 1-1 outlet pressure indication) does not remain available with power from the NNI-X Automatic Transfer Switch. The Essential Power cable for the normal supply, YBU, is routed outside the fire area; however, when the Train 2 batteries 2P and 2N deplete, YBU is lost and the alternate power source, YAR, is not available due to its non-essential supply. Therefore, no SG 1-1 pressure indication is available following a fire in Room 314, and an interim compensatory measure of an hourly fire watch in Room 314 is in place. Corrective Action 2013-02276-5 tracks the resolution of this issue with the lack of SG 1-1 pressure indication.

27. For a fire in Room 314, Train 1 HPIS flow transmitters and low level instrument cables to the Control Room may be lost, as well as Pressurizer level indication (see Note 35), use Reactor Coolant Pressure and Steam Generator 1 Level indication as an alternate indication for measuring injection flow. See CR 2016-03686 for additional information.

28. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

FIRE AREA A TABLE 1 NOTES

29. DH Auxiliary Spray Stop Valve (DH2735) and Throttle Valve (DH2736) are normally closed, in series, valves, one of which needs to remain closed to prevent depressurization in DHR Cooldown. Since DH2735 is unaffected by a fire in this area, no action is required.

30. NOT USED

31. NOT USED

32. The Clean Waste Receiver Tanks (T15-1 & 2) are located in Rooms 123 and 124. Due to the low combustibles in these rooms and the automatic wet-pipe sprinkler system in Room 124; T15-1 & 2 will not be damaged by a fire in these rooms.

33. A hot short in Circuit ACV1453C could cause spurious opening of the Clean Waste Primary Demineralizer Inlet Valve (WC1453). Fail closed WC1453 by isolating it and bleeding off the air.

34. NOT USED

35. A fire in Room 314 could disable all Pressurizer level indicators except LRS-RC14 (Pressurizer Level Recorder). However, when the Train 2 batteries 2P and 2N deplete, YBU is lost and the alternate power source, YAR, is not available due to its non-essential supply. Therefore, no Pressurizer level indication is available following a fire in Room 314, and an iterim compensatory measure of an hourly fire watch in Room 314 is in place. Corrective Action 2013-02276-5 tracks the resolution of this issue with the lack of Pressurizer level indication. See also Note 27.

    The raceways for LRS-RC14 are in the Annulus and are wrapped with 3 hr. fire barrier.

36. TI-RC3B5 is a redundant means of monitoring the same variable (RCS Loop 1 Hot Leg Temperature) as TI-RC3B6. TI-RC3B5 is not affected by a fire in this area.

37. Service water is required to one containment air cooler for Safe Shutdown. The Inlet MOVs SW1366, 1367, and 1368 fail as-is. Outlet Valves SW1356, SW1357 and SW1358 fail open. A loss of air causing the AOV to fail open on the standby cooler could cause insufficient flow to the operating cooler. Spurious closure can occur for any or all of the valves if a fire occurs in Room 314; after the fire is extinguished cooling can be restored manually. Containment air cooling is not required for 2-hours. Procedures provide guidance for placing the Train 1 (or Train 2 for a fire in East side of Room 123 or 124) in service, including opening BE1142 for SW1366 (BF1223 for SW1367), verifying open SW1366 (SW1367) (SW331) then opening SW1356 (SW1357) and SW77 (SW81). In all cases CAC3 will be isolated by SW325 (SW331).

38. Loss of YE2 will cause loss of SFRCS Cabinet C5761A, (SFRCS may actuate; see Note 14).

    Loss of YF2 will cause loss of SFRCS Cabinet (C5792A, (SFRCS may actuate; see Note 14).

FIRE AREA A TABLE 1 NOTES

39. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 will therefore be manually operated to place the DHR System in service.

40. NOT USED

41. NOT USED

42. NOT USED

43. Provides Essential CCW to the Makeup Pump Cooler, bypassing CC1460.

44. The Pilot-operated Relief Valve (PORV) RC2A is normally closed and required to operate to reduce pressure when shutting down on Train 1 with HPIS. The PORV is powered from Essential Train 2. The power supply from the Train 2 batteries are not in this area and the control cable (located in the Annulus) is protected with a radiant energy shield. The Train 2 batteries are available for 1-hour when shutting down on Train 1 which is adequate time to reduce RCS pressure below 1600 psig, HPIS can be used for Inventory Control. Therefore, reduce RCS pressure below 1600 psig using the PORV before the end of 1-hour.

45. RC3716 provides control power to the High Pressure Seal Return closing relays for CC4200 and CC4300. Since CC4200 and CC4300 are not required for Safe Shutdown in this area, control power is not required.

46. RCS Loop 1 High Point Vent Valves (RC4608A & B) are normally closed and are required to remain closed in order to prevent uncontrolled blowdown via the High Point Vents. Since these valves are in series and RC4608B is not affected, blowdown will not occur.

47. The Sample Valves RC239A/B and RC4632 or RC200 need to remain closed. A 3 hr. barrier is installed around the control cables for RC200, RC239 and RC239B. The only other way to have flow is to have a 3-phase hot short of the proper alignment on the power cables of one of the valves AND either a second 3-phase hot short of the proper alignment or a hot short of the proper polarity of a cable 3 penetrations away. This is not credible.

48. RCS Loop 2 High Point Vent Valves (RC4610A & B) are normally closed and are required to remain closed in order to prevent blowdown via the High Point Vents. The penetrations for RC4610A & B are approximately 8 ft. apart (P2P5FI & P2C5CI on Drawing E-362). Penetration P2C5CI contains one other cable. 2CV4632A (E56B/47B 125V DC) for the normally closed and de-energized Cold Leg Sample Valve RC4632. Penetration P2P5FI contains approximately 20 other cables; however, only one valve needs to remain closed for the High/Low Pressure Interface.

    Spurious operations of both valves requires multiple hot shorts of the right polarity. This is incredible because there is not available power source for RC4610B. Also, the Makeup System is available and capable of maintaining RCS Inventory even if these valves did spuriously open.

FIRE AREA A TABLE 1 NOTES

49. SW Discharge Valves to the Intake Structure (SW2929) & Forebay (SW2931) are two of four SW Discharge Valves (SW2929 through SW2932), one of which is normally open and depowered (controlled administratively) to ensure SWS discharge at all times. The sole concern is that at least one of these valves remains open, thereby assuring a service water flow outlet. Since one of the valves is normally open and depowered, there is no concern associated with the possibility of spurious closure of SW2929 or SW2931 precluding SWS discharge capability.

50. The AFW Pump 1 Discharge to SG 1 Valve AF3870 is normally open and required to be open for Safe Shutdown. A review of the circuit indicates that this valve could spuriously close thereby stopping feedwater flow to SG 1. Therefore, trip Breaker D107 at D1PA and open AF3870.

51. The Decay Heat Removal (DHR) Suction 1 Valve DH1517 is closed during normal operations, but required to be open for DHR Cold Shutdown. A review of the circuits indicates loss of power to DH1517. (Note: If DH1517 spuriously opened, it would not affect Safe Shutdown). Therefore, manually open DH1517.

52. The Decay Heat Pump 1 BWST Suction Valve DH2733 is normally open and required to be closed prior to going into DHR Cooldown. A review of the circuit indicates loss of the valve's control circuit. Therefore, manually close DH2733 and trip Breaker BE1121 at MCC E11A.

    Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator, and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

53. For each 4kV Safe Shutdown component, the ammeter/overcurrent protection cables and the power cables are evaluated to ensure that a fire cannot cause a loss of an entire Safe Shutdown Train (e.g. Essential Switchgear Bus C1 or D1) due to a power cable fault and a simultaneous loss of overcurrent protection on the same accredited scheme.

    A trip of an individual load due to a hot short on an ammeter/protection circuit is also evaluated. Train 1 and 2 circuits are both routed in Fire Area A, but do not impact Safe Shutdown for the following reasons:

System	Component	Power Cable	AM Scheme
AFWS	P241	BPAD210A Outside A	BCAD210E Not Req'd for SSD
CCWS	P43-1	1PAC113A Embedded	1CAC113B Adeq Sep for Fire Outside 123/124

FIRE AREA A TABLE 1 NOTES

System	Component	Power Cable	AM Scheme
	P43-2	2PAD113A Embedded	2CAD113B Adeq Sep for Fire Outside 123/124
	P43-3	1PAC108A Outside Fire Area	1CAC108B Adeq Sep for Fire Outside 123/124
		2PAD108A Outside Fire Area	2CAD108B Not Req'd for SSD
		3PACD1A Outside Fire Area	2CAD108B Not Req'd for SSD
DHRS	P42-1	1PAC112A Wrapped	1CAC112B Adeq Sep for Fire Outside 123/124
	P42-2	2PAD112A Adeq Sep for Fire Outside 123/124	2CAD112B Adeq Sep for Fire Outside 123/124
ESSPWR	C1	Cable Bus Outside Fire Area	1CABDCIL Adeq Sep for Fire Outside 123/124
	D2	Cable Bus	BCAD2031A BCAD2033B
		Outside Fire Area	Not Req'd for SSD
HPIS	P58-1	1PAC111A Wrapped	1CAC111B Adeq Sep for Fire Outside 123/124
	P58-2	2PAD111A Adeq Sep for Fire Outside 123/124	2CAD111B Adeq Sep for Fire Outside 123/124
MUPS	P37-2	2PAD105A Embedded	BCAD105B Adeq Sep for Fire in 123/124
SWS	P3-1	1PAC107A Outside Fire Area	1CAC107B Adeq Sep for Fire Outside 123/124

FIRE AREA A TABLE 1 NOTES

System	Component	Power Cable	AM Scheme
	P3-2	2PAD107A Outside Fire Area	2CAD107B Adeq Sep for Fire in 123/124

54. Spurious operation of the Motor Driven Feed Pump (MDFP) P241 is possible due to hot shorts on control cables in this fire area. Manual Operator Action to close locked valve FW6398 shall be taken to preclude overfill of the credited Steam Generator.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: AB

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.AB.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
105	ECCS PUMP RM 1-1	2,000	Y	MAN
113	DECAY HEAT COOLER ROOM	857	Y	MAN
113A	HATCH AREA	15,790	Y	MAN
127W	ANNULUS SPACE (WEST)	8,678	Y	MAN
202	PIPEWAY AREA	400	Y	AUTO
208	NO. 1 MECH PENETRATION RM	5,613	Y	AUTO
208DC	DUCT CHASE	0	N	MAN
225	MAKE UP PUMP ROOM	17,538	Y	MAN
226A	VESITBULE	400	N	MAN
303	NO. 3 MECH PENETRATION RM	8,575	Y	AUTO
303PC	PIPE CHASE	0	N	MAN
AB3	AUX BLD STAIRWELL (CENT)	8,000	N	MAN

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4.6.AB.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA AB

The following components are located in fire area AB.

See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
AFWS	1	AF608	MOV	AFW TO SG1 ISO VLV
CCWS	1	CC1467	SOV	DHR CLR 1 OUT ISO VLV
	2	CC1469	SOV	DHR CLR 2 OUT ISO VLV
CSS	1	CS1530	MOV	CTMT SPRAY ISO VLV
	1	P56-1	PUMP	CS PUMP 1
DHRS	1	DH01B	MOV	LPI LINE 1 VLV
	2	DH09A	MOV	CTMT SUMP ISO VLV A
	1	DH09B	MOV	CTMT SUMP ISO VLV B
	2	DH13A	SOV	DH CLR 2 BYPASS VLV

4.6.AB.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
DHRS	1	DH13B	SOV	DH CLR 1 BYPASS VLV
	2	DH14A	SOV	DH CLR 2 OUT VLV
	1	DH14B	SOV	DH CLR 1 OUT VLV
	1	DH2733	MOV	DH PUMP 1 BWST SUCT VLV
	2	DH2734	MOV	DH PUMP 2 BWST SUCT VLV
	1	DH64	MOV	LPI/HPI CROSS-TIE VLV
	1	E27-1	CLR	DHRS COOLER 1-1
	2	E27-2	CLR	DHRS COOLER 1-2
	1	P42-1	PUMP	DHR/LPI PUMP 1
HPIS	1	HP02C	MOV	HPI 1 DISCH ISO VLV
	1	HP02D	MOV	HPI 1 DISCH ISO VLV
	1	HP32	MOV	HPI PMP 1 RECIRC VLV
	1	P197-1	PUMP	HPI PMP 1 AC LO PUMP
	1	P197-2	PUMP	HPI PMP 1 DC LO PMP
	1	P58-1	PUMP	HPI PUMP 1
MUPS	1	E26-1	CLR	RCP SEAL COOLER 1
	2	E26-2	CLR	RCP SEAL COOLER 2
	1/2	HP1556	MAN	MU RECIRC TO BWST
	1	HP26	MAN	HPI TO RCP SEALS
	1/2	HP29	MAN	MU RECIRC TO BWST
	1/2	MU03	SOV	RC LETDOWN ISO VLV
	1/2	MU04	MOV	LETDOWN PRESS REDUCING VLV
	1/2	MU19	SOV	SEAL INJ INLET ISO VLV
	2	MU203	MAN	Recirc to Seal Return Stop Valve
	1	MU206	MAN	Recirc to Seal Return Stop Valve
	1/2	MU208	MAN	HPI TO RCP SEALS
	1/2	MU214	MAN	SEAL INJ INLET MANUAL ISO VALVE
	1/2	MU216	MAN	SEAL INJ INLET ISO BYPASS VALVE
	2	MU32	FCV	RC MU ISO VLV
	1/2	MU38	SOV	RCP SEAL RETURN ISO VLV
	2	MU3971	MOV	RC MU PUMP SUCT VLV
	1	MU6405	MOV	RC MU PUMP SUCT VLV
	2	MU6406	AOV	MU RECIRC ISO VLV
	1	MU6407	AOV	MU RECIRC ISO VLV
	2	MU6408	MOV	MU CROSS CONNECT ISO VLV
	1	MU6409	MOV	MU CROSS CONNECT ISO VLV
	1	MU6419	MOV	MU DISCH VLV
	2	MU6420	MOV	MU32 BYPASS VLV
	1	MU6421	MOV	MU CTMT ISO VLV
	1/2	MU66A	AOV	RCP 2-1 SEAL INJ ISO VLV
	1/2	MU66B	AOV	RCP 2-2 SEAL INJ ISO VLV
	1/2	MU66C	AOV	RCP 1-1 SEAL INJ ISO VLV
	1/2	MU66D	AOV	RCP 1-2 SEAL INJ ISO VLV
	1	P-371B	PUMP	MUP 1 MAIN LO PUMP
	1	P-371C	PUMP	MUP 1 AUX LO PUMP
	1	P-371D	PUMP	MUP 1 AUX GEAR LO PUMP
	2	P-372B	PUMP	MUP 2 MAIN LO PUMP

4.6.AB.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
MUPS	2	P-372C	PUMP	MUP 2 AUX LO PUMP
	2	P-372D	PUMP	MUP 2 AUX GEAR LO PUMP
	1	P37-1	PUMP	MU PUMP 1
	2	P37-2	PUMP	MU PUMP 2
	1	P371A	PUMP	MU PMP 1 MAIN GEAR LO PMP
	2	P372A	PUMP	MU PMP 2 MAIN GEAR LO PMP
SFRCS	1/2	PDS2686A	PDS	CH 1 MN FW < SG1 PRESSURE SWITCH
	1/2	PDS2686B	PDS	CH 3 MN FW < SG1 PRESSURE SWITCH
	1/2	PDS2686C	PDS	CH 2 MN FW < SG1 PRESSURE SWITCH
	1/2	PDS2686D	PDS	CH 4 MN FW < SG1 PRESSURE SWITCH

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4.6.AB.3 Fire Propagation Control

Fire Area AB is located in the Auxiliary Building consisting primarily of the western half of the first 4 levels (545', 555', 565', 585') of the Aux Bldg and the western half of the Containment Annulus, as shown on drawings A-221F through A-223F. The area includes numerous rooms, pipe/cable chases and ventilation openings which prevent further subdivision by 3-hour fire-rated barriers. The major openings are discussed below.

There is an 8 ft. x 10 ft. Pipe Chase opening located between Room 303 and Room 105 which runs through the floor and ceiling of Room 208. This opening is used as a flow path for the Emergency Ventilation System (EVS). Fire suppression systems have been installed in Rooms 303 and 208.

The Room 208 is located on Elevation 565'-0" of the Auxiliary Building. There is an opening in the east wall allowing access to the Annulus. A wire door is located in the opening, which is approximately 4 ft. wide x 7 ft. high. The opening is used as a flow path for the EVS.

There is an opening in the north wall of 303 allowing access to the Annulus. A wire door is located in the opening, which is approximately 4 ft. wide x 7 ft. high. The opening is used as a flow path for the EVS.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete walls (except as noted below).

In order to preclude any direct flame/fire communication between ECCS Pump Room 105 (Fire Area AB) and ECCS Pump Room 115 (Fire Area A) through an opening into Room 113A (Fire Area AB), a 3-hour fire-rated door assembly (Door 119A) was installed to protect the opening. Fire Door 119A is held open, in order to accommodate HVAC considerations, by an electromagnetic door holder/closer. Upon actuation of the smoke detection system in either ECCS Pump Room (115 or 105) or Room 113A (located between Rooms 105 and 115), the electromagnetic door holder de-energizes, releasing the door allowing the mechanical door closer to bring the door to a closed position.

The Annulus (Rm 127) is divided in half. One half is in Fire Area A, the other in Fire Area AB. There are no fire barriers separating the two halves, but, based on the low combustible loading in the Annulus and the large spatial separation between the combustibles in one half to the other half, a fire would not propagate from one half of the Annulus to the other half.

The Annulus is separated from Containment by the steel pressure vessel. Based on the construction and low combustible loading, a fire will not propagate from the Annulus to Containment.

There is an HVAC duct which penetrates the wall between Room 105 and Stairwell AB3. The penetration does not contain a fire damper due to the physical impossibility of installation. Room 105 and Stairwell AB3 are both in Fire Area AB. Due to the construction of the Ductwork and the low combustible loading in the area, a fire will not propagate from Room 105 to AB3.

There is an equipment removal hatch in the ceiling of Room 113A to Room 227 (Fire Area G). Based on the construction and the low combustible loading, a fire will not propagate from one area to the other.

There are several penetrations which have penetration seals that do not meet the test configurations or penetrations with small annular gaps (too small to seal properly). These nonrated openings have been evaluated and will not allow the propagation of a fire.

Rooms 113 and 113A have structural steel which does not have a 3-hr fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in these rooms.

Room 105 has structural steel which does not have a 3-hour fire rating. A detailed analysis shows that only the columns would fail in a fire in Room 105. The bottom 15 ft of the columns will be protected with 3-hour fire-proofing. Rooms 202, 208 and 303 have structural steel which does not have a 3-hr fire rating. Based on analysis of the combustible loadings and automatic wet-pipe sprinklers in these rooms, the steel will not fail.

5.6.AB.4 Fire Detection and Suppression

Fire Area AB consists of various rooms and/or plant areas. The following areas have detection:

1. ECCS Pump Room 105, Fire Detection Zone FDZ 105
2. Decay Heat Cooler Room 113, Fire Detection Zone FDZ 113
3. Hatch Area Room 113A, Fire Detection Zone FDZ 113
4. Pipeway Area Room 202, Fire Detection Zone FDZ 208
5. No. 1 Mechanical Penetration Room 208, Fire Detection Zone, FDZ 208.
6. No. 3 Mechanical Penetration Room 303, Fire Detection Zone, FDZ 303.
7. Annulus Space (West) Room 127W
8. Makeup Pump Room 225

The following rooms are provided with automatic wet-pipe sprinkler systems:

1. No. 1 Mechanical Penetration Room 208
2. No. 3 Mechanical Penetration Room 303
3. Pipeway Area Room 202

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-221F through A-231F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.AB.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area AB. Safe Shutdown will be accomplished using the High Pressure Injection System (HPIS) along with the Pressurizer Vent Path (RC200 and RC239A) for Reactor Coolant System Inventory Control, the Makeup and Purification System (MUPS) for a Letdown path and HPIS Seal Injection for RCP Seal Cooling. The RCP seals will be restaged using flow through the RCP Seal Return line.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1PBE1146A			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	2PBF1118A 2PBF1118B			SO NOT POSSIBLE SO NOT POSSIBLE	5B 5B
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1173C 1CBE1173D 1PBE1173A 1PBE1173B P1C2LX P1P2MX		OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-2501 (OPEN CC1407A) OP-02501 (OPEN CC1407A) OP-02501 (OPEN CC1407A)	13 13 13 13 13 13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1176C 1CBE1176D 1PBE1176A 1PBE1176B P1C2LX P1C2MX		OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A)	13 13 13 13 13 13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	2CV1469A		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	5C,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	2CV1469B		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	5C,26
											2CV1469C		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	5A,26
											2CV1469D		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	5A,26
											2CV1469E		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	5C,26
											EV1469		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
											NV1469		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
											SV1469		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1CBE1162C		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											1CBE1162D		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											1CVCF01BC		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											1CVCF01BD		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											1PBE1162A		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											1PBE1162B		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											P1C2LX		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
											P1P2MX		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	1CBE1156B			OP-02501 (TRIP P56-1)	13
											1CBE1156C			OP-02501 (TRIP P56-1)	13
											1CBE1156E			OP-02501 (TRIP P56-1)	13
											1CBE1156F			OP-02501 (TRIP P56-1)	13
											1CBE1156G			OP-02501 (TRIP P56-1)	13
											1PBE1156A			OP-02501 (TRIP P56-1)	13
											EV1530			OP-02501 (TRIP P56-1)	13
											EVDH09B			OP-02501 (TRIP P56-1)	13
											MV1530			OP-02501 (TRIP P56-1)	13
											NV1530			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147F			OP-02501 (TRIP P56-2)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CSS	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147G			OP-02501 (TRIP P56-2)	13
											EVDH09A			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111D		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111F		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111G		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1PBE111A		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											EV1530		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											MP0561		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											NP0561		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	2CBF1148J			VALVE DE-ENERGIZED	18
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142B		MOD 89-0089	VALVE DE-ENERGIZED	18
											2CBF1142C		MOD 89-0089	VALVE DE-ENERGIZED	18
											2CBF1142D		MOD 89-0089	VALVE DE-ENERGIZED	18
											2CBF1142J	MVDH07A	MOD 89-0089	VALVE DE-ENERGIZED	18
											2PBF1142A		MOD 89-0089	VALVE DE-ENERGIZED	18
											EVDH09A		MOD 89-0089	VALVE DE-ENERGIZED	18
											MVDH09A		MOD 89-0089	VALVE DE-ENERGIZED	18
											NVDH09A		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112B		MOD 89-0089	VALVE DE-ENERGIZED	18
											1CBE1112C		MOD 89-0089	VALVE DE-ENERGIZED	18
											1CBE1112D		MOD 89-0089	VALVE DE-ENERGIZED	18
											1CBE1112J	MVDH07B	MOD 89-0089	VALVE DE-ENERGIZED	18
											1PBE1112A		MOD 89-0089	VALVE DE-ENERGIZED	18
											EVDH09B		MOD 89-0089	VALVE DE-ENERGIZED	18
											MVDH09B		MOD 89-0089	VALVE DE-ENERGIZED	18
											NVDH09B		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183C		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											1CBE1183D		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											1PBE1183A		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											1PBE1183B		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											P1C2LX		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											P1P2MX		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	2CVDH13AA			SOV WITH OPEN CONTACTS	5C
											2CVDH13AB			SOV WITH OPEN CONTACTS	5C
											2CVDH13AC			INDICATION ONLY	5A
											2CVDH13AD			SOV WITH OPEN CONTACTS	5C
											2CVDH13AG			INDICATION ONLY	5A
											EV1469			SPURIOUS ACTUATION NOT CREDIBLE	5C
											NVDH13A			SPURIOUS ACTUATION NOT CREDIBLE	5C
											SVDH13A			SPURIOUS ACTUATION NOT CREDIBLE	5C
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	2CVDH14AA			SOV WITH OPEN CONTACTS	5C
											2CVDH14AB			SOV WITH OPEN CONTACTS	5C
											2CVDH14AC			INDICATION ONLY	5A
											2CVDH14AD			SOV WITH OPEN CONTACTS	5C
											2CVDH14AE			INDICATION ONLY	5A
											2CVDH14AF			SOV WITH OPEN CONTACTS	5C
											EV1469			SPURIOUS ACTUATION NOT CREDIBLE	5C
											NVDH14A			SPURIOUS ACTUATION NOT CREDIBLE	5C
											SVDH14A			SPURIOUS ACTUATION NOT CREDIBLE	5C

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	2CBF1129G	MV2734	OP-02501 (OPEN DH1518)	OP-02501 (OPEN DH1518)	27
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	2CBF1134D		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											2CBF1134E		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											2CBF1134F		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											2CBF1134G	MV1518	OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											2PBF1134A		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											EV2734		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											MV2734		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
											NV2734		OP-02501 (OPEN DH2734)	OP-02501 (OPEN DH2734)	27
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	1CBE1155C			SO NOT CREDIBLE	5C
											1PBE1155A			SO NOT CREDIBLE	5B
											P1C2MX			SO NOT CREDIBLE	5C
											P1P2MX			SO NOT CREDIBLE	5B
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	2CBF1195C		OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63)	27
											2CBF1195D		OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63)	27
											2PBF1195A		OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63)	27,11
	E27-2	DHRS COOLER 1-2	CLR	AB	2	FUNC	FUNC	N/A		C	NONE			LOW COMBUSTIBLE LOADING IN AREA	27
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112E		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
											1PAC112A		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
											MP0421		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
											NP0421		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	21
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	2PBF1189A			NOT REQUIRED FOR S/D	11
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS ACTUATES	13
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS ACTUATES	13
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	2CBF1194C 2CBF1194D 2CBF1194G 2PBF1194A			VALVE DE-ENERGIZED VALVE DE-ENERGIZED VALVE DE-ENERGIZED VALVE DE-ENERGIZED	31 31 31 31
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	1CAC111E 1PAC111A MP0581 NP0581		OP-02501 (TRIP P58-1) OP-02501 (TRIP P58-1) OP-02501 (TRIP P58-1) OP-02501 (TRIP P58-1)	SFAS ACTUATES SFAS ACTUATES SFAS ACTUATES SFAS ACTUATES	13 13 13 13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE			SFAS ACTUATES	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CV11011C 1CV11011F			SO NOT POSSIBLE SO NOT POSSIBLE	5C 5C
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	E26-1	RCP SEAL COOLER 1	CLR	AB	1	FUNC	FUNC	N/A		H	NONE			LOW COMBUSTIBLE LOADING	33
	E26-2	RCP SEAL COOLER 2	CLR	AB	2	FUNC	FUNC	N/A		H	NONE			LOW COMBUSTIBLE LOADING	33
	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			N/A	
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE		OP-02501 (OPEN HP27)	OP-02501 (OPEN HP27)	16
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			N/A	
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1171C 1CBE1171D 1PBE1171A 1PBE1171B P1C2LX P1P2MX		OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A)	13 13 13 13 13 13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1172C		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1CBE1172D		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1CBE1172G		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1CBE1172H	FTS3745B	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1CBE1172I	FPSH3759	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1CBE1172J	FPSH3763	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1PBE1172A		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											1PBE1172B		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											P1C2LX		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											P1P2MX		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
											RC3801		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	2CSF1744B	PSLLMU03	OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											2CVMU03A		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											2CVMU03B		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											2CVMU03C		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											2CVMU03D		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											2CVMU03E		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											EVMU03		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											FPSLLMU03		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											NVMU03		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
											SVMU03		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	ACBE2259B		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
											ACBE2259D		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
											ACBE2259E		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
											APBE2259A		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
											EVMU040		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
											MVMU040		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BCNNI261C			OP-02501 (OPERATE MU214 & MU216)	16
											BCNNI264A			OP-02501 (OPERATE MU214 & MU216)	16
											BCY36218A			OP-02501 (OPERATE MU214 & MU216)	16
											BLNNI261D			OP-02501 (OPERATE MU214 & MU216)	16
											BLNNI264B			OP-02501 (OPERATE MU214 & MU216)	16
											FTMU19			OP-02501 (OPERATE MU214 & MU216)	6
											FYMU19-2			OP-02501 (OPERATE MU214 & MU216)	6
											VMU19			OP-02501 (OPERATE MU214 & MU216)	16
											ZTMU19			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE			N/A	
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (THROTTLE MU216)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	BCNNI264C			NOT REQUIRED FOR S/D	7
											BCY36217A			NOT REQUIRED FOR S/D	7
											BLCOF532C			NOT REQUIRED FOR S/D	7
											BLNNI264D			NOT REQUIRED FOR S/D	7
											BLNNI264H			NOT REQUIRED FOR S/D	7

LEGEND

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See page 4.AB-15a

SAFE SHUTDOWN ANALYSIS

FIRE AREA : AB

TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
											BLNNI264J			OP-02501(OPERATE MU214 & MU216)	16
											FYMU19-2A			OP-02501(OPERATE MU214 & MU216)	6

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	FYMU32			NOT REQUIRED FOR S/D	7
											FYMU32A			NOT REQUIRED FOR S/D	7
											FZTMU32			NOT REQUIRED FOR S/D	7
											MU32			NOT REQUIRED FOR S/D	7
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	2CSF1747A		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38A		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38B		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38C		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38D		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38E		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											EVMU38		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											NVMU38		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											SVMU38		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	2CBF1617E			NOT REQUIRED FOR S/D	7
											2CBF1617F			NOT REQUIRED FOR S/D	7
											2CBF1617G			NOT REQUIRED FOR S/D	7
											2PBF1617D			NOT REQUIRED FOR S/D	7
											EV3971			NOT REQUIRED FOR S/D	7
											MU3971			NOT REQUIRED FOR S/D	7
											NV3971			NOT REQUIRED FOR S/D	7
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1174C	2/TDC	OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											1CBE1174D	2/TDC	OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											1PBE1174A		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											1PBE1174B		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											P1C2LX		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											P1P2MX		OP-02501 (OPEN MU59A)	OP-02591 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1175C		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											1CBE1175D		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											1PBE1175A		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											1PBE1175B		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											P1C2LX		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											P1P2MX		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1177C		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											1CBE1177D		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											1PBE1177A		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											1PBE1177B		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											P1C2LX		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											P1P2MX		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1178C		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											1CBE1178D		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											1PBE1178A		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											1PBE1178B		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											P1C2LX		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											P1P2MX		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	2CV6406A			NOT REQUIRED FOR S/D	7
											2CV6406B			NOT REQUIRED FOR S/D	7
											2CV6406C			NOT REQUIRED FOR S/D	7
											2CV6406D			NOT REQUIRED FOR S/D	7
											EV6406			NOT REQUIRED FOR S/D	7
											NV6406			NOT REQUIRED FOR S/D	7
											SV6406			NOT REQUIRED FOR S/D	7
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1208C			NOT REQUIRED FOR S/D	7
											2CBF1208D			NOT REQUIRED FOR S/D	7
											2CBF1208E			NOT REQUIRED FOR S/D	7
											2PBF1208F			NOT REQUIRED FOR S/D	7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	EV6408			NOT REQUIRED FOR S/D	7
											MV6408			NOT REQUIRED FOR S/D	7
											NV6408			NOT REQUIRED FOR S/D	7
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	2CBF1616C			NOT REQUIRED FOR S/D	7
											2CBF1616D			NOT REQUIRED FOR S/D	7
											2CBF1616E			NOT REQUIRED FOR S/D	7
											2PBF1616F			NOT REQUIRED FOR S/D	7
											EV6408			NOT REQUIRED FOR S/D	7
											MV6420			NOT REQUIRED FOR S/D	7
											NV6420			NOT REQUIRED FOR S/D	7
	MU6422	MU CIMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1748A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AA		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AB		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AC		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AD		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											EVMU38		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											FPSLLMU66A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											NVMU66A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											SVMU66A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											VMU66A		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1736A	KA,KB	OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BA		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BB	KA,KB	OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BC		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BD		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											EVMU66		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											FPSLLMU66B		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											NVMU66B		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											SVMU66B		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											VMU66B		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1737A	KA,KB	OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CA		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CB	KA,KB	OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CC		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CD		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											EVMU66		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											FPSLLMU66C		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											NVMU66C		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											SVMU66C		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											VMU66C		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1749A	KA,KB	OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DA		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DB		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DC		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DD		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											EVMU03		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											FPSLLMU66D		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											NVMU66D		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											SVMU66D		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											VMU66D		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1167C	RX-2,RX-11-2		NOT REQUIRED FOR S/D	7
											BCBF1167D			NOT REQUIRED FOR S/D	7
											BPBF1167A			NOT REQUIRED FOR S/D	7
											MP372B			NOT REQUIRED FOR S/D	7
											NP372B			NOT REQUIRED FOR S/D	7
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	BCD217B			NOT REQUIRED FOR S/D	7
											BCD217D			NOT REQUIRED FOR S/D	7
											BCD217E			NOT REQUIRED FOR S/D	7
											BCD217F	PS2MU105A		NOT REQUIRED FOR S/D	7
											BCD217G	AD105		NOT REQUIRED FOR S/D	7
											BPD217A			NOT REQUIRED FOR S/D	7
											FPS2MU105A			NOT REQUIRED FOR S/D	7
											MP372C			NOT REQUIRED FOR S/D	7
											NP372C			NOT REQUIRED FOR S/D	7
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1168B			NOT REQUIRED FOR S/D	7
											BCBF1168D			NOT REQUIRED FOR S/D	7
											BCBF1168E	BF1167		NOT REQUIRED FOR S/D	7
											BCBF1168F	PSMU102A		NOT REQUIRED FOR S/D	7
											BCBF1168G	D217		NOT REQUIRED FOR S/D	7
											BCBF1168I	AD105		NOT REQUIRED FOR S/D	7
											BPBF1168A			NOT REQUIRED FOR S/D	7
											FPSMU102A			NOT REQUIRED FOR S/D	7
											MP372D			NOT REQUIRED FOR S/D	7
											NP372D			NOT REQUIRED FOR S/D	7
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	2PAD105A			NOT REQUIRED FOR S/D	7
											BCAD105E			NOT REQUIRED FOR S/D	7
											BCAD105F			NOT REQUIRED FOR S/D	7
											BCAD105G			NOT REQUIRED FOR S/D	7
											BCAD105H			NOT REQUIRED FOR S/D	7
											BCAD105K	MV3971		NOT REQUIRED FOR S/D	7
											FPS3MU105A			NOT REQUIRED FOR S/D	7
											MP0372A			NOT REQUIRED FOR S/D	7
											MV3971			NOT REQUIRED FOR S/D	7
											NP0372A			NOT REQUIRED FOR S/D	7
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			NOT REQUIRED FOR S/D	7
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	ACV1453C		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	32
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743C		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743D		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743E		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACV1743G		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
											ACVM43C		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU31A			NOT REQUIRED FOR S/D	7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	FE-MU31 FT-MU31			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU34A FE-MU34 FT-MU34			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	1LTRC3A5A 1LTRC3A5B P1L1LX			USE TI-RC3A6 USE TI-RC3A6 USE TI-RC3A6	29 29 29
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602C			RC2A REMAINS CLOSED	28

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602D 1PBE1602A 1PBE1602B P1C2LX P1P2MX			RC2A REMAINS CLOSED RC2A REMAINS CLOSED RC2A REMAINS CLOSED RC2A REMAINS CLOSED RC2A REMAINS CLOSED	28 28 28 28 28
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			OP-02501 (Open RC200)	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			OP-02501 (Open RC239A)	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BA 1CV4608BC			RC4608A IN SERIES RC4608A IN SERIES	30 30
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			SFAS ANALOG INPUT	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ANALOG INPUT	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ANALOG INPUT	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ANALOG INPUT	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11A 1LSGLT11C P1L1LX			SFRCS ACTUATES SFRCS ACTUATES SFRCS ACTUATES	14 14 14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31A 1LSGLT31C P1L1LX			SFRCS ACTIATES SFRCS ACTUATES SFRCS ACTUATES	14 14 14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AB
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11B 1LSGLT11D P1L1LX			SFRCS ACTUATES SFRCS ACTUATES SFRCS ACTUATES	14 14 14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31B 1LSGLT31D P1L1LX			SFRCS ACTUATES SFRCS ACTUATES SFRCS ACTUATES	14 14 14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD11B			SFRCS ACTUATES	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD31B			SFRCS ACTUATES	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD21C			SFRCS ACTUATES	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD41C			SFRCS ACTUATES	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MV0830	DHR CLR 2 OUT XOVER									2PBF1185A	F11D		NOT REQUIRED FOR S/D	21
ASSCKT	MV5068	CTMT H2 PURGE FN 2 IN VLV									2PBF1164A	F11D		NOT REQUIRED FOR S/D	21
ASSCKT	MV5441	ECCS RM 115 HVAC ISO VLV									2PBF1178A	F11D		NOT REQUIRED FOR S/D	21
ASSCKT	MV5442	ECCS RM 115 HVAC ISO VLV									2PBF1179A	F11D		NOT REQUIRED FOR S/D	21
ASSCKT	C31-1	ECCS RM 115 CLR FAN 1									2PBF1192A	F11E		NOT REQUIRED FOR S/D	10,11
ASSCKT	C31-2	ECCS RM 115 CLR FAN 2									2PBF1193A	F11E		NOT REQUIRED FOR S/D	10,11
ASSCKT	CFPP18Q	F/P PANEL CFPP18Q									2CY222B			LOST DUE TO BREAKER COORDINATION	20

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA AB

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

9. NOT USED

10. An evaluation has shown that ECCS Pump Room Cooler Fans C31-1 through -5 are not required for SSD. An exemption is no longer required from the provisions of Appendix R III.G.3 to have full area suppression where credit is taken for an Alternate Shutdown capability. (Use of portable ventilation for ECCS Pump Room 115 is not required.)

11. MCC F11E may trip due to a lack of coordination in associated circuit breakers. The only Safe Shutdown equipment affected by loss of MCC F11E are HPI Pump 2 Recirc Valve (HP31) and LPI/HPI Crosstie Valve (DH63). Safe Shutdown can be achieved in this fire area in spite of the loss of power to these components. HP31 is normally open, fails as-is and is required open for Shutdown. DH63 will be manually closed.

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication. (See Note 12).

Due to lose of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
HP02A, B	HPI 2 Disch Iso Vlv	Open	Throttle HP02A & B from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B

COMPONENT	DESCRIPTION	EFFECT	ACTION
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BV1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

RCP Seal Return Flow. The following manual valves will need to be operated:

MU97	Open	WC119	Open
MU182	Close	WC120	Open

RCP Seal Injection from the HPI System with RCS Letdown via the Makeup System. The following valves may need to be manually operated:

HP27	Open	MU11	Align to CWRT
MU02B	Open MU02B & Trip BE1172 at E11B	MU208	Open
MU04	Open MU04 & Trip BE2259 at E22B	MU214	Close
MU10A	Open	MU216	Throttle

17. NOT USED

18. To prevent spurious operation, Valves DH09A, DH9B, DH7A, and DH7B have been depowered.

19. NOT USED

20. NOT USED

21. MCC F11D may trip due to a lack of coordination in associated circuit breakers. The only Safe Shutdown equipment affected by loss of MCC F11D are Backup Battery Charger (DBC2PN) and CCW Return Header 2 Valve (CC2649). Safe Shutdown can be achieved in this fire area in spite of the loss of these components.

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. CCW is provided to the Makeup Pump Cooler, by passing CC1460.

25. Although DH12 is a High/Low Interface component, Valve DH11 is in series and has no circuits that pass through this fire area. Failure of these circuits could result in the inability to open DH12 as required to initiate Decay Heat Removal when going from Hot Shutdown to Cold Shutdown. Bypass Valves DH21 and DH23, which are located outside of this fire area, will be opened.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened.

(NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. Failure of Circuit 2CBF1129G could affect operation of DH1518. Trip Breaker BF1129 at F11C and manually open DH1518 if required.

    Failure of these circuits could prevent remote operation of DH2734 and a hot short in Circuits 2CBF1134D, E, & G, could cause spurious operation. Trip Breaker BF1134 at F11C and manually operate DH2734 if required. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator, and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

    A hot short in Circuit 2CBF1195C or 2CBF1195D could cause spurious opening of DH63. Trip Breaker BF1189 at F11A (de-energizes F11E) and manually operate DH63 if required (See Note 11).

    Cooler E27-2 is a mechanical component located in an area with very low combustible loading.

28. There are two concerns for Valve RC11 associated with this fire area:

    1) Spurious closure would isolated the power operated Relief Valve (RC2A) and impair the ability to provide Makeup to the RCS Inventory using the HPI system. If this occurs, then use the Pressurizer Vent Path (RC200 and RC239A).

    2) RC11 is a High/Low Pressure Interface Valve. Since it is in series with normally closed Valve RC2A, which is unaffected by a fire in this fire area, RC11 is not a concern.

29. TI-RC3A6 is a redundant means of monitoring the same variable (RCS Loop 2 Hot Leg Temperature) as TI-RC3A5. No circuits for TI-RC3A6 pass through this fire area. The power supply for TI-RC3A6 is C5755G which is not affected by a fire in this fire area.

30. RC4608B is not a concern because RC4608A is in series and not affected by a fire in this area.

31. To prevent spurious operation, valve HP31 has been de-energized.

32. Failure of Circuit ACV1453C could affect the ability to close WC1453 in the normal manner. Fail close WC1453 by venting off its air supply.

33. Coolers E26-1 and 2 are passive mechanical components in areas of very low combustible loading.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: AC

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.AC.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
A1	BWST PIPE TRENCH	400	N	MAN
A2	PWST TRENCH	400	N	MAN

……..

4.6.AC.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA AC

The following components are located in fire area AC.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
DHRS	2	DH07A	MOV	BWST ISO VLV A
	1	DH07B	MOV	BWST ISO VLV B
SFAS	1/2	LT1525A	LT	BWST Level Transmitter
	1/2	LT1525B	LT	BWST Level Transmitter
	1/2	LT1525C	LT	BWST Level Transmitter
	1/2	LT1525D	LT	BWST Level Transmitter

4.6.AC.3 Fire Propagation Control

The north, south and east walls are below grade and backed up by backfill. The south and east wall area a minimum 1 ft. thick concrete with all penetration seals to meet a 3-hour rating: There is negligible combustible material in the vicinity of the trenches for a fire to propagate past the metal plate into the trench.

The combustible loading is due to incidentals and grease associated with 2 motor-operated valves. All cables are routed in steel conduit. A 1 inch schedule 160 pipeline for hydrogen supply to the Makeup Tank is routed through this area. This line is installed to Seismic Class I requirements and has no valves located in this area. Therefore, the hydrogen and cable insulation are not considered in the combustible loading.

4.6.AC.4 Fire Detection and Suppression

There is no automatic fire detection located in the Pipe Trenches. Manual fire suppression equipment is provided for this area by fire extinguishers located as shown on Drawings A-221F through A-230F and Hose House (HH) 11 located within 90 feet of the trenches. In the event of a fire, smoke would be vented through the hatch-type door in the roof.

4.6.AC.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area AC. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and MUPS Seal Injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	2CBF1148B			VALVE DE-ENERGIZED	18
											2CBF1148C			VALVE DE-ENERGIZED	18
											2CBF1148D			VALVE DE-ENERGIZED	18
											2CBF1148E			VALVE DE-ENERGIZED	18
											2CBF1148J			VALVE DE-ENERGIZED	18
											2PBF1148A			VALVE DE-ENERGIZED	18
											EVDH07A			VALVE DE-ENERGIZED	18
											MVDH07A			VALVE DE-ENERGIZED	18
											NVDH07A				18
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142J	MVDH07A	MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112J	MVDH07B	MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			NOT REQUIRED FOR S/D	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU203)	OP-02501 (CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			SFAS ANALOG INPUT	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ANALOG INPUT	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ANALOG INPUT	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ANALOG INPUT	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : AC
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

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FIRE AREA AC TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection, and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 54-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates that High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA AC TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B

FIRE AREA AC TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	WC119	Open
MU182	Close	WC120	Open

FIRE AREA AC TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU11	Direct Flow to CWRT
MU01B	Open	MU214	Close
MU02B	Open	MU216	Throttle
MU10A	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A, DH9B, DH7A, and DH7B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, by passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. NOT USED

28. NOT USED

29. NOT USED

FIRE AREA AD

4.6.AD.1 Fire Area Description

Room No.	Description	Combustible Loading	Detection	Suppression
118	Elevator Mach Rm	3,304 Btu/ft^2	Y	Man
AB2	Aux Bldg Stairwell (East)	400 Btu/ft^2	N	Man
EL3	Aux Bldg Elevator (RACA)	400 Btu/ft^2	N	Man

4.6.AD.2 Safe Shutdown Equipment In Fire Area AD

There are no Safe Shutdown components or cables in this fire area.

4.6.AD.3 Fire Propagation Control

Fire Area AD is located in the Auxiliary Building and consists primarily of one elevator shaft (with its Machine Room) and one stairwell (Elevations 545’ to 613’) as shown on Drawings A-221F through A-224F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by a minimum of 2-hour fire-rated walls and ceilings.

This fire area contains no Safe Shutdown equipment and therefore provides the equivalent of 3-hour separation between fire areas containing Safe Shutdown equipment. That is, a fire in one Safe Shutdown area would have to breach one 2-hour wall to enter the Stairwell/Elevator Shaft and then breach another 2-hour wall to spread to another Safe Shutdown fire area. Based on the low combustible loading in this fire area and the low combustible loadings or automatic suppression in surrounding fire areas, it is highly unlikely for a fire to breach one of the 2-hour fire barriers, let alone 2 fire barriers.

The fire barriers are primarily 12 inch concrete block walls with minimum 10 inch thick poured concrete ceilings.

In order to preclude any direct flame/fire/smoke communication between the Corridor Room 110 (Fire Area A) and Elevator Machine Room 118 (Fire Area AD) through an opening, a 1-1/2-hour fire-rated door assembly (Door 103) was installed to protect the opening. Fire Door 103 is held open, in order to accommodate tornado depressurization vent considerations, by an electromagnetic door holder/closer. Upon actuation of the smoke detection system in either the Corridor (110) or the Elevator Machine Room (118), the electromagnetic door holder de-energizes, releasing the door allowing the mechanical door closer to bring the door to a closed position.

4.6.AD.4 Fire Detection and Suppression

Fire Area AD consists of Rooms 118, AB2 & EL3. The following area has detection:

1. Elevator Machine Room 118, Fire Detection Zone FDZ-118

Room AB2 & EL3 do not have detection in this fire area.

There is no automatic suppression in this fire area.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-221F through A-229F.

In the event of a fire, smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.AD.5 Fire Area AD Safe Shutdown Summary

Since there are no Safe Shutdown components or cables in this fire area, a fire in this area will not affect Safe Shutdown.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: B

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.B.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
100	EQUIPMENT & PIPE CHASE	76,391	Y	MAN
101	PIPE TUNNEL	1,060	Y	MAN

……

4.6.B.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA B

The following components are located in fire area B.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	1	E12E	MCC	480VAC MCC
	2	F11E	MCC	480VAC MCC

……

FIRE AREA B

4.6.B.3 Fire Propagation Control

Fire Area B is located at elevation 545 west end of the Auxiliary Building.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour fire-rated ceiling and walls.

4.6.B.4 Fire Detection and Suppression

Fire Area B consists of two rooms covered by Fire Detection Zone FDZ 101. Manual fire suppression equipment is provided for this fire area. Fire Extinguishers and Hose Stations (HS) are shown on Drawings A-221F through A-231F.

In the event of a fire, smoke venting will be accomplished in accordance with the Pre-Fire Plan.

4.6.B.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area B. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, MUPS for a Letdown path and MUPS Seal Injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	2PBF1118A 2PBF1118B			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	5B 5B
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	7
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	2CBF1148J			VALVE DE-ENERGIZED	18
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142J	MVDH07A	MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112J	MVDH07B	MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	2CBF1195C 2CBF1195D 2PBF1195A		OP-02501 (CLOSE DH63) OP-02501 (CLOSE DH63) OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63) OP-02501 (CLOSE DH63) OP-02501 (CLOSE DH63)	27 27 27

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	BF1195		OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63)	27
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS ACTUATES	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	2PBF1189A F11E			DE-ENERGIZE AT F11A DE-ENERGIZE AT F11A	29 29
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	2CBF1194C 2CBF1194D 2CBF1194G 2PBF1194A BF1194			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7 7
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	OP-02501 (TRIP P58-1)	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CRWT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU203)	OP-02501 (CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			SFAS ANALOG INPUT	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ANALOG INPUT	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ANALOG INPUT	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ANALOG INPUT	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	C31-1	ECCS RM 115 CLR FAN 1									2PBF1192A	F11E		LOST DUE TO LACK OF COORDINATION	11

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : B
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ASSCKT	C31-2	ECCS RM 115 CLR FAN 2									2PBF1193A	F11E		LOST DUE TO LACK OF COORDINATION	11

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA B TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA B TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. F11E will be de-energized. See Note 29.

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30 minutes are available to complete the manual action.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication. (See Note 12).

Due to loss of power to Train 1, Channels 1 and 3, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA B TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, fire trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA B TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct Flow to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup Suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to provide MUPS Recirc to the BWST rather than the MU Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A, DH9B, DH7A, and DH7B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW to the Makeup Pump Cooler, by passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. DH63 would spuriously open following a hot short in Circuits 2CBF1195C or 2CBF1195D. To preclude this, Procedure DB-OP-02501 will include instructions to close/verify closed DH63 and open fused disconnect switch BF1189 at MCC F11A for a fire in this area (See Note 29).

28. NOT USED

FIRE AREA B TABLE 1 NOTES

29. Open Fused Disconnect Switch BF1189 at MCC F11A to de-energize MCC F11E and Valve DH63. MCC F11E provides power to DH63 and HP31. DH63 will be manually closed (see Note 27) and HP31 is not required for Shutdown.

FIRE AREA BD

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BD

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.BD.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
050	SCREEN WASH PUMP ROOM	17,200	N	Man
054	STAIRWAY	400	N	Man

…….

4.6.BD.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BD

The following components are located in fire area BD.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
HVAC	1	HV0531A	DMPR	AIR IN LVR FOR B/U SW PUMP
	1	HV0532A	DMPR	AIR IN LVR FOR B/U SW PUMP
	1	C100	FAN	TRAV SCR AREA EXH FAN (B/U SW PUMP)
SWS	1/2	P180	PUMP	BACKUP SW PUMP

……

4.6.BD.3 Fire Propagation Control

Fire Area BD is located in the Intake Structure as shown on Drawing A-230F.

A fire that originates in this fire area will be contained in this fire area. This fire area is separated from other fire areas by 3-hour fire-rated barriers.

4.6.BD.4 Fire Detection and Suppression

There is no automatic fire detection located in this area.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-230F.

In the event of a fire, smoke venting is accomplished in accordance with the Pre-Fire Plans.

4.6.BD.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area BD. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and MUPS Seal Injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	7
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			0P-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU203)	OP-02501 (CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13

LEGEND

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SFAS	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BD
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	AP1800 APAC201A APAP1800A APAP1800B MP1800			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7 7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BD TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BD TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Train 1 Channels 1 and 3, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA BD TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BD TABLE 1 NOTES

Additionally, the following valve may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct Flow to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to provide MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been depowered.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pumps, thereby passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

FIRE AREA BE

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BE

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.BE.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
051	DIESEL FIRE PUMP ROOM	8,625	Y	MAN
055	DIESEL FIRE PMP TNK ENCL	741,576	N	MAN

…….

4.6.BE.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BE

The following components are located in fire area BE.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	1	E12C	MCC	480VAC MCC
	1	E12D	MCC	480V AC MCC

……..

FIRE AREA BE

4.6.BE.3 Fire Propagation Control

Fire Area BE is located in the Intake Structure as shown on Drawing A-230F.

A fire that originates in this fire area will be contained in this fire area. This fire area is separated from other fire areas by 3-hour fire-rated barriers (except as noted below).

The west wall of Room 51 contains 1 non-rated opening. To preclude any direct flame/fire communication with Room 52A (Fire Area BF), an automatic wet-pipe sprinkler (fed from Room 52) is located in the opening.

The south wall of Room 51 contains 1 fire damper which was not certified for closure against air flow. This arrangement has been tested and found acceptable.

The Diesel Fire Pump is located on a concrete stand which is surrounded by a 6 inch concrete curb to contain any leakage of fuel or lubricating oil.

The Fire Pump Diesel Oil Day Tank (T47) is surrounded by a 1 foot high concrete curb to contain any leakage of fuel.

4.6.BE.4 Fire Detection and Suppression

Fire Area BE consists of 2 rooms. Room 51 is covered by Detection Zone FDZ 51.

Room 51 is provided with a manual wet-pipe sprinkler system which utilizes fusible sprinklers. Actuation is accomplished by opening FP215 located in Room 53 (Fire Area BG).

Manual fire suppression equipment is provided for this fire area. Fire Extinguishers and Hose Stations (HS) are shown on Drawing A-230F.

In the event of a fire, smoke venting is accomplished in accordance with the Pre-Fire Plans.

4.6.BE.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area BE. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, for a Letdown path and Seal Injection for RCP Seal Cooling.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	7
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407A)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C			OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XYA										NONE			N/A	7
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

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TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU203)	OP-02501 (CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1473)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13

LEGEND

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SFAS	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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SFRCS	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BE
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BE TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BE TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Train 1, Channels 1 and 3, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA BE TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BE TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct Flow to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, bypassing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

FIRE AREA BF

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BF

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.BF.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
052	SERVICE WATER PUMP AREA	13,052	Y	AUTO
052A	SERVICE WATER FAN ENCL.	400	N	MAN

……

4.6.BF.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BF

The following components are located in fire area BF.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	2	F12C	MCC	480VAC MCC
	2	F12D	MCC	480VAC MCC
HVAC	1	C99-1	FAN	SW PMP RM EXH FAN 1
	1	C99-2	FAN	SW PMP RM EXH FAN 2
	2	C99-3	FAN	SW PMP RM EXH FAN 3
	2	C99-4	FAN	SW PMP RM EXH FAN 4
SWS	1	P3-1	PUMP	SW PUMP 1
	2	P3-2	PUMP	SW PUMP 2
	1/2	P3-3	PUMP	SW PUMP 3

……..

4.6.BF.3 Fire Propagation Control

Fire Area BF is located in the Intake Structure as shown on Drawing A-230F.

A fire that originates in this fire area will be contained in this fire area. This fire area is separated from other fire areas by 3-hour fire-rated barriers (except as noted below).

The east wall of Room 52A contains 1 non-rated opening. To preclude any direct flame/fire communication with Room 51 (Fire Area BE), an automatic wet-pipe sprinkler (fed from Room 52) is located in the opening.

The north wall of Room 52 contains 1 fire damper which was not certified for closure against air flow. This arrangement has been tested and found acceptable.

4.6.BF.4 Fire Detection and Suppression

Fire Area BF consists of 2 rooms. Room 52 is covered by Detection Zone FDZ 52 and is provided with an automatic wet-pipe sprinkler system.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-230F.

In the event of a fire, smoke venting is accomplished in accordance with the Pre-Fire Plans.

4.6.BF.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area BF. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling. The Backup Service Water Pumps will be used instead of Service Water Pump 1 or 3.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			N/A	
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-2)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2)	OP-02501 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	ACBE1257I ACBE1257L JT3030 RC3007			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	7
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			PROVIDE POWER TO P180	27
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS SFRCS CH 2/4 INITIATES AFW	14
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			OP-02501 (START C100)	28
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	1CBE1212B			OP-02501 (USE P180)	27
											1CBE1212C	TS4688		OP-02501 (USE P180)	27
											1PBE1212A			OP-02501 (USE P180)	27
											MC9901			OP-02501 (USE P180)	27
											NC9901			OP-02501 (USE P180)	27
											TS4688			OP-02501 (USE P180)	27
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	1CBE1205B			OP-02501 (USE P180)	27
											NC9901			OP-02501 (USE P180)	27
											TS4688			OP-02501 (USE P180)	27
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			OP-02501 (USE P180)	27
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			OP-02501 (USE P180)	27
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	SFAS INITIATED	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS INITIATED	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS INITIATED	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS INITIATED	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS INITIATED	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE		OP-02501 (USE P180)	OP-02501 (USE P180)	27
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107E			OP-02501 (USE P180)	27
											1PAC107A			OP-02501 (USE P180)	27
											MP0031			OP-02501 (USE P180)	27
											NP0031			OP-02501 (USE P180)	27
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	1CAC109F			OP-02501 (USE P180)	27
											3PACD6A			OP-02501 (USE P180)	27
											MP0033			OP-02501 (USE P180)	27
											NP0033-1			OP-02501 (USE P180)	27
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	

LEGEND

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TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277B		OP-02501 (CLOSE SW45)	OP-02501 (CLOSE SW45)	27
											1CBE1277E		OP-02501 (CLOSE SW45)	OP-02501 (CLOSE SW45)	27
											1CBE1277G		OP-02501 (CLOSE SW45)	OP-02501 (CLOSE SW45)	27
											1CBE1277H	PSL1376A	OP-02501 (CLOSE SW45)	OP-02501 (CLOSE SW45)	27
											FPSL1376A		OP-02501 (CLOSE SW45)	OP-02501 (CLOSE SW45)	27
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			N/A	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	1CBE1281B			ONE VALVE NO & DEPOWERED	27
											1CBE1281F			ONE VALVE NO & DEPOWERED	27
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	1CBE1282B			ONE VALVE NO & DEPOWERED	27
											1CBE1282F			ONE VALVE NO & DEPOWERED	27
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MF0153	SW PMP STRNR 3									3PBEF124A	EF12C		N/A	6
ASSCKT	SW1381	SW PMP STRNR 3 DRN VLV									3PBEF125A	EF12C		N/A	6

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BF TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BF TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Stop P56-1 from the CR after blocking SFAS
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA BF TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3869 is manually closed, first trip Breaker BE1146 at E11E.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BF TABLE 1 NOTES

The following valves may also need to be operated manually:

CC1409	Open	MU10A	Open
MU01A	Open	MU11	Align to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup Suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A before going below 700 psig.

23. NOT USED

24. Essential CCW has been provided to the Makeup Pump Cooler, by passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. The Backup Service Water Pump (P180) will be used instead of Service Water Pump P3-1, or 3. Bus C2 and Bus A will be aligned in accordance with the Plant procedure for loss of Service Water. Open Breaker AACC2 at Bus C2 to isolate Bus A. Since Pump P180 is not located in the Service Water Pump Room, HV0531A, HV0532A, C99-1, and C99-2 are not needed.

FIRE AREA BF TABLE 1 NOTES

SW45 will be closed manually since a hot short may damage SW1399 in this fire area. Although the circuits for SW2929 and SW2931 pass through this fire area, a discharge path for SWS is assured because SW2929, SW2930, SW2931, or SW2932 is always open and depowered.

28. Operators will manually start fan C100.

FIRE AREA BG

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BG

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.BG.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
053	SERVICE WTR VALVE ROOM	11,678	Y	MAN
053A	PIPE TUNL-H20 TRMT BLDG	14,114	N	MAN
250	PIPE TUNNEL	23,074	N	MAN
251	VALVE ROOM	1,032	N	MAN

.....

4.6.BG.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BG

The following components are located in fire area BG.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
SWS	2	SW1395	MOV	TPCW HX IN HEADER ISO VLV
	1	SW1399	MOV	TPCW HX IN HEADER ISO VLV
	1	SW2929	MOV	SW TO INT STRU VLV
	2	SW2930	MOV	SW TO INT FOREBAY VLV
	1	SW2931	MOV	SW TO CLG TOWER MU VLV
	2	SW2932	MOV	SW TO COLLECT BASIN VLV
	1	SW45	MAN	TPCW HX ISO VLV
	2	SW46	MAN	TPCW HX ISO VLV

……...

4.6.BG.3 Fire Propagation Control

Fire Area BG is located in the Intake Structure and Service Water Tunnel as shown on Drawings A-222F, A-223F and A-230F.

This fire area is separated from other fire areas by 3-hour fire-rated barriers (except as noted below).

The door between Room 334 (Fire Area II) and Room 251 (Fire Area BG) is not a fire door. Based on the sprinkler system in Room 334, the low combustible loading and the construction for the door, a fire will not spread from one fire area to the other.

The north wall of Room 53A to Room 15 (Fire Area BH) is an Appendix A fire barrier and is not taken credit for, as Safe Shutdown.

4.6.BG.4 Fire Detection and Suppression

Fire Detection is provided in the Service Water Valve Room 53 (Fire Detection Zone FDZ 53)

Manual fire suppression equipment is provided for in this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-222F, A-223F and A-230F.

In the event of a fire, isolation and smoke venting is accomplished in accordance with the Pre-Fire Plans.

4.6.BG.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area BG. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, for a Letdown path and Seal Injection for RCP Seal Cooling. Analysis shows that for a fire in combined Fire Areas BG and BH, Safe Shutdown is not impacted. Shutdown is the same as for this fire area.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			N/A	
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-2)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2)	OP-02501 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501 (OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	ACBE1257I ACBE1257L ACBE1257N			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS INITIATES	13
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS INITIATES	13
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS SFRCS CH 2/4 INITIATES AFW	14
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	1PBE1202A			3 HR WRAP	3
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A'	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NOT REQUIRED FOR S/D	7
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NOT REQUIRED FOR S/D	7
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	LOSS OF AIR	12

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501 (CLOSE MU206)	OP-02501 (CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	SFAS INITIATED	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS INITIATED	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS INITIATED	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS INITIATED	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS INITIATED	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	14
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	APAC201A			NOT REQUIRED FOR S/D	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107E 1PAC107A			3 HR WRAP 3 HR WRAP	3 3
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	1CAC109F 3PACD6A			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277B 1CBE1277C 1CBE1277D 1CBE1277E			OP-02501 (CLOSE SW54,55,56) OP-02501 (CLOSE SW54,55,56) OP-02501 (CLOSE SW54,55,56) OP-02501 (CLOSE SW54,55,56)	28 28 28 28

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BG
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277G			OP-02501 (CLOSE SW54,54,56)	28
											1CBE1277H	PSL1376A		OP-02501 (CLOSE SW54,55,56)	28
											1PBE1277A			OP-02501 (CLOSE SW54,55,56)	28
											EV1399			OP-02501 (CLOSE SW54,55,56)	28
											MV1399			OP-02501 (CLOSE SW54,55,56)	28
											NV1399			OP-02501 (CLOSE SW54,55,56)	28
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			N/A	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	1CBE1281B			ONE VALVE NO & DEPOWERED	27
											1CBE1281C			ONE VALVE NO & DEPOWERED	27
											1CBE1281D			ONE VALVE NO & DEPOWERED	27
											1CBE1281G	FPSH2929		ONE VALVE NO & DEPOWERED	27
											1PBE1281A			ONE VALVE NO & DEPOWERED	27
											EV2929			ONE VALVE NO & DEPOWERED	27
											FPSH2929			ONE VALVE NO & DEPOWERED	27
											MV2929			ONE VALVE NO & DEPOWERED	27
											NV2929			ONE VALVE NO & DEPOWERED	27
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	1CBE1282B			ONE VALVE NO & DEPOWERED	27
											1CBE1282C			ONE VALVE NO & DEPOWERED	27
											1CBE1282D			ONE VALVE NO & DEPOWERED	27
											1PBE1282A			ONE VALVE NO & DEPOWERED	27
											EV2929			ONE VALVE NO & DEPOWERED	27
											MV2931			ONE VALVE NO & DEPOWERED	27
											NV2931			ONE VALVE NO & DEPOWERED	27
											NV2931			ONE VALVE NO & DEPOWERED	27
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02501 (CLOSE SW54)	OP-02501 (CLOSE SW54)	28
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02501 (CLOSE SW55)	OP-02501 (CLOSE SW55)	28
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02501 (CLOSE SW56)	OP-02501 (CLOSE SW56)	28

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BG TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BG TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Stop P56-1 from the CR after blocking SFAS
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, Band Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA BG TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3869 is manually closed, first trip Breaker BE1146 at E11E.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection & Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BG TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1409	Open	MU10A	Open
MU01A	Open	MU11	Align to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, by-passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. Although the circuits for SW2929 and SW2931 pass through this fire area, a discharge path for SWS is assured because one or the other is always open and depowered.

28. The circuits for Valve SW1399 and the valve itself may be affected by a fire in this area. Service Water flow to the TPCW Heat Exchangers will be terminated by manually closing Valves SW54, SW55 and SW56 which are located outside this fire area.

FIRE AREA BG TABLE 1 NOTES

29. NOT USED

FIRE AREA BH

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BH

TRAIN ACCREDITED FOR SHUTDOWN: 1/2

4.6.BH.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
010	SAMPLE LABORATORY	36,000	N	MAN
011	SUBSTATION	81,082	Y	MAN
012	CHEMICAL STORAGE ROOM	24,000	Y	MAN
012A	CONTROL ROOM	400	N	MAN
013	CHLORINATION ROOM	10,895	Y	MAN
015	FILTER ROOM	6,045	Y	MAN

…….

4.6.BH.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BH

The following components are located in fire area BH.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION

NONE

……

4.6.BH.3 Fire Propagation Control

Fire Area BH is the Water Treatment Building, as shown on Drawing A-231F.

A fire that originates in this fire area will be contained in the fire area.

This fire area's walls are exterior walls except for one small portion of the South wall which separates this fire area from Fire Area BG. This wall is an Appendix A barrier and is not taken credit for in the Safe Shutdown analysis.

There is a drain located under Door 111 which separates Fire Area BH from BG. A portion of this drain is provided with a steel cover under Door 111 to prevent the spread of a fire under the door.

The major combustible in this fire area is the Substation located in Room 11. The interior wall and floor to Room 11 are 2-hour fire-rated walls/floor which separate Room 11 from the rest of Fire Area BH.

Also, the walls and floors of Room 12 and 13 (Chemical Storage Room and Chlorination Room) are provided with 2-hour fire-rated walls which separate these two rooms from the rest of Fire Area BH to reduce the consequences of a fire involving chemicals.

4.6.BH.4 Fire Detection and Suppression

The Motor-Driven Fire Pump and Jockey Fire Pump are located in this fire area. The Diesel-Driven Fire Pump is located outside this area and is available to provide fire suppression.

Fire Area BH consists of various rooms. The following areas have detection:

1.	Substation Room 11	Alarms on Panel C5401
2.	Chemical Storage Room 12	Alarms on Panel C5401
3.	Chlorination Room 13	Alarms on Panel C5401
4.	Filter Room 15	Partial Coverage Alarms on Panel C5401

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-231F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.BH.5 Fire Area BH Safe Shutdown Summary

Both Train 1 and 2 are available for Safe Shutdown in Fire Area BH. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

If a fire spreads from this fire area to Fire Area BG, Shutdown using Train 1 in accordance with Fire Area BG. Analysis shows a fire in both areas at the same time will not affect Safe Shutdown.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			N/A	
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			N/A	
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE			N/A	
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			N/A	
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			N/A	
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1411B	CCW INLET IS0 VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CREVS	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			N/A	
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			N/A	
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE			N/A	
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE			N/A	
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE			N/A	
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE			N/A	
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE			N/A	
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE			N/A	
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	ACBE1257N ACBE1257P RC3001			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE			N/A	
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE			N/A	
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	
	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	12
	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	16
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	16
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	12
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE			N/A	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	16
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	16
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	16
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	16
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			BLOCK SFRCS SIGNAL	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			BLOCK SFRCS SIGNAL	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			BLOCK SFRCS SIGNAL	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			BLOCK SFRCS SIGNAL	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			N/A	
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			N/A	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BH TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BH TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle	WC1743	Open
MU38	Open	WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. SFAS will not actuate, since neither Train of power to SFAS is affected.

14. Response to SFRCS initiation due to loss of Off-Site Power (LOOP) is in accordance with DB-OP-02000. Both Trains of SFRCS are available.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

RCP Seal Return, Seal Injection and Letdown Flow

The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU03	Open
MU01A	Open	MU10A	Open
MU01B	Open	MU11	Direct Flow to CWRT
MU02A	Open	MU66A-D	Open
MU02B	Open		

CS Inventory Control

After transferring the Makeup suction to the BWST, MU203 (Train 2) or MU206 (Train 1) will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

FIRE AREA BH TABLE 1 NOTES

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. NOT USED

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, by-passing CC1460.

25. NOT USED

26. The DHR Cooler 1-1(1-2) Isolation Valve CC1467 (CC1469) is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BM

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.BM.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
A3	DIESEL OIL ...PUMPHOUSE	400	Y	MAN

……..

4.6.BM.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BM

The following components are located in fire area BM.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
EDG	1	P8-1	PUMP	DO XFER PUMP 1

……

4.6.BM.3 Fire Propagation Control

Fire Area BM is located approximately 250 ft. northwest of the Power Block and consists of the Diesel Oil Pumphouse and Diesel Oil Storage Tank (T45) as shown on Drawing A-231F.

The Diesel Oil Storage Tank is surrounded by a dike (the pumphouse is part of the dike) with a capacity in excess of the tank.

There is no other structure in proximity to this area and, therefore, a fire in this area would not spread to other fire areas.

4.6.BM.4 Fire Detection and Suppression

The Diesel Oil Pumphouse is provided with automatic fire detection.

Manual fire suppression equipment is provided for this area. Fire extinguisher locations are shown on A-231F.

The Yard hydrant and Hose House 18 provide backup suppression.

The Pumphouse can be ventilated using portable fans. The tank is outside and requires no smoke venting.

4.6.BM.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area BM. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, Letdown and Seal Injection for RCP Seal Cooling.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HPIS	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C75-2										NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203)	OP-02501(CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BM
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BM TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) is provided and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BM TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after Blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip B31174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B

FIRE AREA BM TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BM TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct flow to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

25. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: BN

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.BN.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
A4	EMERG DIESEL WK TANKS	3,863,179	N	MAN

…….

4.6.BN.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA BN

The following components are located in fire area BN.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
EDG	1	P195-1	PUMP	EDG FUEL OIL TRANSFER PUMP 1
	2	P195-2	PUMP	EDG FUEL OIL TRANSFER PUMP 2
	1	T153-1	TANK	EDG FUEL OIL TANK 1-1
	2	T153-2	TANK	EDG FUEL OIL TANK 1-2

…….

4.6.BN.3 Fire Propagation Control

Fire Area BN is located in the Yard approximately 500 ft. northwest of the Power Block. It consists of the two Emergency Diesel Generator Fuel Oil Storage Tanks which are installed outdoors, above grade level, and are protected by a truncated pyramid of structural backfill to a minimum depth of 4 ft.-6 in. Both tanks are vented to the atmosphere through gooseneck vent pipes which are provided with flame arresters. Each tank contains one Seismic I electric motor-driven submersible supply pump. Access to the pumps is through a 48-inch manway on top of each tank.

The use of vented tanks with flame arresters and the protection provided by the structural backfill reduces the probability of a fire originating in this area. In addition, if a fire did originate in this area, it's distance (500 ft.) from the Power Block reduces the effects of such a fire on any other equipment required for Safe Shutdown.

4.6.BN.4 Fire Detection and Suppression

There is no automatic fire detection in the tanks.

Manual fire suppression is provided for this area by Yard hydrants and Hose Houses 14 and 15.

There is no need for smoke venting in this area since it is completely outdoors.

4.6.BN.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area BN. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			N/A	
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE			OP-02501 (TRIP P14-2)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501(TRIP P14-2)	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2)	OP-02501 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	1CBE1298B 1PBE1298A MP1951 NP1951		MOD 88-0203 MOD 88-0203 MOD 88-0203 MOD 88-0203	OP-02501 PROV ALT F.O. SUPPLY OP-02501 PROV ALT F.O. SUPPLY OP-02501 PROV ALT F.O. SUPPLY OP-02501 PROV ALT F.O. SUPPLY	27 27 27 27
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE		OP-02501(PROVIDE ALT FO SUPPLY)	OP-02501(PROV ALT F.O. SUPPLY)	27
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	T153-1	EDG FUEL OIL TANK 1-1	TANK	BN	1	FUNC	FUNC	N/A		C	N/A			OP-02501 (PROV ALT F O SUPPLY)	27
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	7
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS ACTUATED	13
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATED	13
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS ACTUATED	13
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS SFRCS CH2/4 INITIATES AFW	14
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A'	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XYA										NONE			N/A	7
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	LOSS OF AIR	12

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501(OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	16
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	SFAS INITIATED	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS INITIATED	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS INITIATED	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS INITIATED	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS INITIATED	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			N/A	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : BN
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			N/A	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA BN TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC IEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA BN TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle
WC1743	Open
WC1747	Open

CC1695 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Stop P56-1 from the CR after blocking SFAS
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip BKR BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38

FIRE AREA BN TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3869 is manually closed, first trip Breaker BE1146 at E11E.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA BN TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1409	Open	MU10A	Open
MU01A	Open	MU11	Direct Flow to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, by-passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. Fuel oil can be transferred from the Oil Storage Tank (T45) using the Oil Transfer Pump P8-1 after connecting the flexible hose. EDG Fuel Oil Tank 1 (T153-1) and EDG Fuel Oil Transfer Pump 1 (P195-1) would then not be used.

FIRE AREA CA

4.6.CA.1 Fire Area Description

Fire area CA consists of the Containment Access Facility (CAF), which is a multi-purpose, four-story building, containing general offices as well as radiation protection briefing areas and dress-out spaces that are to be used prior to entry into Containment; as well as to directly access the Missile Shield Passageway (MSP) for entry into the Auxiliary Building. The CAF also provides an additional exit way from the MSP at elevation 603'.

4.6.CA.2 Safe Shutdown Equipment In Area CA

There is no safe shutdown equipment or cable in the fire area.

4.6.CA.3 Fire Propagation Control

Fire area CA is located adjacent to the south wall of the Auxiliary Building and the south and west walls of the Personnel Shop Facility (PSF) passageway (fire area PS). The west wall of fire area CA is adjacent to the Low Level Radwaste Storage Facility (fire area RW).

Fire area CA is separated from the walls of the Auxiliary Building, Personnel Shop Facility passageway, and the Low Level Radwaste Storage Facility by fire rated walls of the CAF.

4.6.CA.4 Fire Detection and Suppression

The CAF has an alarm panel that transmits alarms and trouble signals to the main control room.

All floors in the building are provided with fixed sprinklers.

4.6.CA.5 Fire Area CA Safe Shutdown Summary

There are no Safe Shutdown components or cables in this fire area. Therefore, safe Shutdown is not affected by a fire in this area.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: CC

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.CC.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
411	CORRIDOR	400	Y	MAN
411CC1	411 CABLE CLOSET 1	59,988	N	MAN
411CC2	411 CABLE CLOSET 2	21,200	N	MAN
411CC3	411 CABLE CLOSET 3	11,319	N	MAN
412	CORRIDOR	8,000	Y	MAN
412A	CORRIDOR	8,000	Y	MAN
413	TRACE ANALYSIS LAB	39,167	Y	MAN
414	RESPIRATOR MAINTENANCE ROOM	24,000	N	MAN
415	CORRIDOR	8,000	Y	MAN
417	DECON SHOWER	24,000	Y	MAN
417A	DECON SHOWER	8,000	Y	MAN
418	DECON SHOWER	24,000	Y	MAN
419	I&C HOT SHOP	36,000	Y	MAN
420	I&C HOT SHOP	36,000	Y	MAN
420A	I&C HOT SHOP	36,000	Y	MAN
421	CHEMISTRY/RP STORAGE AREA	40,000	Y	MAN
422	VESTIBULE	400	N	MAN
422B	LADDER SPACE	400	N	MAN
423	CHEMISTRY OIL TESTING LAB	36,000	Y	MAN
424	CHEM LAB	36,000	Y	MAN
424A	CHEM LAB	24,000	N	MAN
424B	CHEM LAB	36,000	Y	MAN
424C	COUNTING ROOM	36,000	Y	MAN
425	INST CALIB ROOM	36,000	N	MAN
426	PERSONNEL LOCK AREA	8,000	Y	MAN

……

4.6.CC.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA CC

The following components are located in fire area CC.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
SFAS	1/2	PT2003	PT	CTMT VESSEL PRESS XMTR

…….

4.6.CC.3 Fire Propagation Control

Fire Area CC is located in the Auxiliary Building consisting primarily of the southeast portion of the 603' elevation, as shown on Drawing A-224F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete walls (except as noted below).

The concrete block walls enclosing the stairwells and elevator shafts (Fire Area UU and AD) are rated for 2-hours. Based on the construction arrangement and low combustible loadings, a fire will not propagate from one fire area to another. See Fire Areas AD and UU for details.

There are several penetrations which have penetration seals that do not meet the test configurations or penetrations with small annular gaps (too small to seal properly). These non-rated openings have been evaluated and will not allow the propagation of a fire.

4.6.CC.4 Fire Detection and Suppression

Fire Area CC consists of various rooms. The following areas have detection:

1. Corridor, Room 411, Fire Detection Zone FDZ 412A
2. Corridor, Room 412, Fire Detection Zone FDZ 412A
3. Corridor, Room 412A, Fire Detection Zone FDZ 412A
4. Trace Analysis Lab, Room 413, Fire Detection Zone FDZ 412A
5. Corridor, Room 415, Fire Detection Zone FDZ 412A
6. Decon Shower, Room 417, Fire Detection Zone FDZ 412A
   I&C Hot Shop, Room 419, Fire Detection Zone FDZ 412A
7. I&C Hot Shop, Room 420, Fire Detection Zone FDZ 412A
   I&C Hot Shop, Room 420A, Fire Detection Zone FDZ 412A
8. Chemistry/RP Storage Area, Room 421, Fire Detection Zone FDZ 412A
9. Chem. Oil Testing Lab, Room 423, Fire Detection Zone FDZ 412A
10. Chem Lab, Room 424, Fire Detection Zone FDZ 412A
11. Chem Lab, Room 424B, Fire Detection Zone FDZ 412A
12. Counting Room, Room 424C, Fire Detection Zone FDZ 412A
13. Personnel Lock Area, Room 426, Fire Detection Zone FDZ 412A
14. Decon Shower, Room 417A, Fire Detection Zone FDZ 412A
15. Decon Shower, Room 418, Fire Detection Zone FDZ 412A

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-224F.

In the event of a fire, isolation and smoke venting will be in accordance with the Pre-Fire Plans.

4.6.CC.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area CC. Safe Shutdown will be accomplished using the High Pressure Injection System (HPIS) along with the Power-Operated Relief Valve (RC2A) for Reactor Coolant System Inventory Control, the Makeup and Purification System (MUPS) for a Letdown path and the HPIS Seal Injection for RCP Seal Cooling. The RCP seals will be restaged using flow through the RCP Seal Return line.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146B 1CBE1146H			OP-02501 (TRIP P14-1) OP-02501 (TRIP P14-1)	14 14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			VALVE FAILS OPEN	19
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271L			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501(TRIP P14-1)	14,31
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13,31
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CLR3757A 1CLR3757B		OP-02501 (OPEN CC1411A) OP-02501 (OPEN CC1411A)	SFAS INITIATED SFAS INITIATED	13 13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13,31
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	25
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	10
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	1CV1495C 1CV1495E			OP-02501 (OPERATE CC43) OP-02501 (OPERATE CC43)	10,12 10,12
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	2CBF1161F 2CBF1161G	 AD113	OP-02501 (OPEN CC2649) OP-02501 (OPEN CC2649)	OP-02501 (OPEN CC2649) OP-02501 (OPEN CC2649)	11 11

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	10,12
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1CBE1162F		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	17
											1CBE1162G	PSH7530A	OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	17
											1CVCF01BB		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	17
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	1CBE1156H			OP-02501 (TRIP P56-1)	13
											1CBE1156J			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147B			OP-02501 (TRIP P56-2)	13
											2PBF1147A			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			POWER SUPPLY MAY BE LOST	31
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112E		MOD 89-0089	VALVE DE-ENERGIZED	18
											1CBE1112F		MOD 89-0089	VALVE DE-ENERGIZED	18
											1CBE1112H		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	28
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183G		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	28
											1CBE1183J		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	28
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	2CVDH14AF			SPURIOUS CLOSURE NOT CREDIBLE	5C
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	1CBE1155F			DH2736 AVAILABLE	30
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	2CBF1195F		OP-02501 (CLOSE DH63)	OP-02501 (CLOSE DH63)	26
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112B 1CAC112C 1CAC112F		OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1)	SFAS INITIATED SFAS INITIATED SFAS INITIATED	13 13 13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	1CYE211A			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF POWER INITIATES SFAS	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	2CD2P20D			ICS038B FAILS OPEN (AS-IS)	19
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			LOST DUE TO BREAKER COORDINATION	31
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	BCYBU41A			OP-02501 (OPEN WC1747)	12
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS INITIATED	13
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS INITIATED	13
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	2CBF1194F			VALVE DE-ENERGIZED	22
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE			SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CV1011C 1CV1011F			INDICATION ONLY SO NOT POSSIBLE	5A 5C
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			N/A	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE		OP-02501 (OPEN HP27)	OP-02501 (OPEN HP27)	16
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1171F 1CBE1171G		OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A) OP-02501 (OPEN MU02A)	13 13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1172F		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	2CVMU03C 2CVMU03E		OP-02501 (OPEN MU03) OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03) OP-02501 (OPEN MU03)	13 13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	ACBE2259C		OP-02501 (OPEN MU04)	OP-02501 (OPEN MU04)	16
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	ACBE2262C		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2263C			NOT REQUIRED FOR S/D	7
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	ACBE2278C ACBE2278I ACBE2278J ACBE2278L	FYIC-MU39 86/FB	OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT) OP-02501 (ALIGN MU11 TO CWRT)	16 16 16 16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BLNNI261D			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2271C			NOT REQUIRED FOR S/D	7
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE			N/A	
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	BCNNI264C BLNNI264D			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	2CVMU38C		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	2CVMU38D		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
											2CVMU38E		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1174F	2/TDC	OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
											1CBE1174G	KA,KB	OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1175F		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
											1CBE1175G	KA,KB	OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1177F		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
											1CBE1177G	KA,KB	OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1178F		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
											1CBE1178G	KA,KB	OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CVMU66AB		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
											2CVMU66AD		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1736A	KA,KB	OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BB	KA,KB	OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
											1CVMU66BD		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1737A	KA,KB	OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CB	KA,KB	OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
											1CVMU66CD		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CVMU66DB		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
											2CVMU66DD		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1167B			NOT REQUIRED FOR S/D	7
											BCBF1167C	RX-2,RX-11-2		NOT REQUIRED FOR S/D	7
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	BCD217B			NOT REQUIRED FOR S/D	7
											BCD217F	PS2MU105A		NOT REQUIRED FOR S/D	7
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1168C			NOT REQUIRED FOR S/D	7
											BCBF1168D			NOT REQUIRED FOR S/D	7
											BCBF1168E	BF1167		NOT REQUIRED FOR S/D	7
											BCBF1168F	PSMU102A		NOT REQUIRED FOR S/D	7
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	ACV1453D		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	16
											ACV1453F		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	16
											ACV1453G		OP-02501 (CLOSE WC1453)	OP-02501 (CLOSE WC1453)	16

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743G		OP-02501 (OPEN WC1743)	OP-02501(OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	BCV1747G		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	ACV3560C ACV3560D		OP-02501 (OPEN WC3560) OP-02501 (OPEN WC3560)	OP-02501 (OPEN WC3560) OP-02501 (OPEN WC3560)	16 16
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU31A			NOT REQUIRED FOR S/D	7
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU34A			NOT REQUIRED FOR S/D	7
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	ALNNI852G			USE PI-SP12A	7
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	ALNNI833A			NOT REQUIRED FOR S/D	7
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126H			SPURIOUS ACTUATION NOT POSSIBLE	23
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127G			SPURIOUS ACTUATION NOT POSSIBLE	23
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	1CV4608AC 1CV4608AD			SPURIOUS ACTUATION NOT CREDIBLE SPURIOUS ACTUATION NOT CREDIBLE	24 24
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BC			SPURIOUS ACTUATION NOT CREDIBLE	24
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632B			SPURIOUS ACTUATION NOT POSSIBLE	23
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	1CLY6453A 1CLY6453B			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	13 13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ACTUATES	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ACTUATES	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ACTUATES	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	4LSFPT42A			SFAS ACTUATES	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11A			SFRCS MAY ACTUATE	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11B			NOT REQUIRED FOR S/D	7,14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD11C			SFRCS MAY ACTUATE	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD31C			SFRCS MAY ACTUATE	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD11B			SFRCS MAY ACTUATE	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD31B			SFRCS MAY ACTUATE	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD41C			SFRCS MAY ACTUATE	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM11B			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM31B			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : CC
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MV2012B	CTMT NORM SUMP ISO VLV									2PBF1138A	F11B		EMBEDDED CONDUIT	1*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA CC TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC IEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA CC TABLE 1 NOTES

9. NOT USED

10. The DHR Cooler 1-1 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS Cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467(CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467(CC1469).

11. The CCW Return Header 2 Valve CC2649 is normally closed and required to be open to provide cooling for Seal Return. A review of the circuits indicates spurious closure and loss of control power. Therefore, trip Breaker BF1161 at MCC F11D.

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

    CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

    At least 30-minutes are available to complete the manual action unless otherwise noted.

    In this fire area WC1747 may also fail due to loss of RC1761.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

    Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
HP02A, B	HPI 2 Disch Iso Vlv	Open	Operate from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
P58-2	HPI Pump 2	On	Req'd for RCS Inventory Control

FIRE AREA CC TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MUO2A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in

the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

Inventory Control will be maintained using HPIS Train 2 and Depressurizing using the PORV. Pressurizer level can be controlled by throttling on HPO2A or 02B as required.

Upon restoration of seal injection, RCP Seal Flow will be used to restage the seals draining to the Clean Waste Receiver Tanks.

The following valves may need to be operated:

MU10A	Open	WC119	Open
MU11	Direct flow to CWRT	WC120	Open
MU97	Close	WC1453	Close
MU182	Close	WC3560	Open

In addition, RCP Seal Cooling will be accomplished by Seal Injection and Letdown.

The following valves may need to be operated:

CC1410	Open	MU04	Open
HP27	Open	MU208	Open
MU01B	Open	MU214	Close
MU02B	Open	MU216	Throttle

17. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. AFPT 2 Governor Control Valve ICS038B is normally open on the high speed stops and required to be operable for Safe Shutdown. Loss of power supply (CDF-12A-1) causes the valve to fail as-is open. The AFPT 2 will operate at normal speed and Auxiliary Feedwater will be controlled by using AFWP 2 Flow Control Valve AF6451 (SG-2 level).

20. NOT USED

21. NOT USED

22. To prevent spurious operation, valve HP31 has been de-energized.

23. Pressurizer Vapor Sample Valves RC239A & B and Cold Leg SG-2 Sample Valve RC4632 are normally closed and are required to be closed to prevent RCS Depressurization. A review of the circuit indicates that spurious actuation of the valves is not possible. Also, RC200 is available to prevent RCS Depressurization.

FIRE AREA CC TABLE 1 NOTES

24. Valves RC4608A & B are in series and 4 shorts would be required to repower both valves. See E-52B sht 71A & B. Such an occurrence is not credible. The one inch lines include a restricting orifice sized to limit the flow to within the Makeup System capacity.

25. Essential CCW is provided to the Makeup Pump which provides a bypass around CC1460.

26. LPI/HPI Cross-Connect Valve DH63 is normally closed and required to be closed for DHR cooldown. A review of the circuit indicates spurious opening is possible. Transfer control on CDF-11D to local and close/verify closed DH63 prior to using DHR. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

27. NOT USED

28. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

29. NOT USED

30. Although DH2736 may be affected by a fire in this area, DH2735 remains available to function as the boundary isolation valve.

31. Due to lack of breaker coordination, MCC F11B may be lost for a fault in the power cable for Valve CS1531. The following Safe Shutdown equipment is powered from MCC F11B:

MS107A	Not required for Shutdown
CC1407B	Manually operated
CC1411B	Manually operated
DH07A	Normally open, fail as-is, Shutdown position is “open” Breaker is also maintained in the open position

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: D

TRAIN ACCREDITED FOR SHUTDOWN: 1/2

4.6.D.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
213	REACTOR AREA	896	N	MAN
214	CORE FLOODING TANK AREA	400	Y	MAN
215	LET DOWN COOLER AREA	400	Y	MAN
216	STEAM GENERATOR AREA	47,554	Y	MAN
217	CORE FLOOD TANK AREA	400	N	MAN
218	STEAM GENERATOR AREA	47,857	Y	MAN
219	LOWER CANAL AREA	400	N	MAN
220	INCOME INSTR TRENCH AREA	14,933	Y	MAN
315	TANK AREA	17,276	N	MAN
316	FLOODING TANK AREA	29,854	N	MAN
317	HATCH AREA	3,311	Y	MAN
317A	EMERGENCY LOCK ENCLOSURE	400	N	MAN
407	HATCH AREA	29,705	N	MAN
410	PASSAGE	6,093	Y	MAN
580	PRESSURIZER VALVE ROOM	400	Y	MAN
700	PASSAGE	2,787	N	MAN
701	PASSAGE	400	N	MAN

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4.6.D.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA D

The following components are located in fire area D.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
CACS	1	C1-1	FAN	CAC FAN 1
	2	C1-2	FAN	CAC FAN 2
	1 / 2	C1-3	FAN	CAC FAN 3
	1	E37-1	HX	CAC COIL 1
	2	E37-2	HX	CAC COIL 2
	1/2	E37-3	HX	CAC COIL 3
CCWS	1/2	CC1407A	MOV	CCW OUT ISO VLV FROM CTMT
	1	CC1409	MOV	CCW TO LETDOWN CLR 1 IN VLV
	2	CC1410	MOV	CCW TO LETDOWN CLR 2 IN VLV
	1/2	CC1411A	MOV	CCW INLET ISO VLV TO CTMT

4.6.D.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
CFS	2	CF01A	MOV	CORE FLOOD TK 2 ISO VLV
	1	CF01B	MOV	CORE FLOOD TK 1 ISO VLV
DHRS	2	DH11	MOV	DH NORM SUCT LINE VLV
	1	DH12	MOV	DH NORM SUCT LINE VLV
	1/2	DH2735	MOV	DH AUX SPRAY STOP VLV
MUPS	1	E25-1	CLR	LETDOWN COOLER 1-1
	2	E25-2	CLR	LETDOWN COOLER 1-2
	1/2	MU01A	MOV	LETDOWN CLR 1 IN VLV
	1/2	MU01B	MOV	LETDOWN CLR 2 IN VLV
	1/2	MU02A	MOV	LETDOWN CLR OUT VLV
	1/2	MU02B	MOV	LETDOWN CLR IN VLV
	1/2	MU59A	MOV	RCP 2-1 SEAL RETURN VALVE
	1/2	MU59B	MOV	RCP 2-2 SEAL RETURN VALVE
	1/2	MU59C	MOV	RCP 1-1 SEAL RETURN VALVE
	1/2	MU59D	MOV	RCP 1-2 SEAL RETURN VALVE
NNI	2	TE-RC3A6	TE	RCS LOOP 2 HOT LEG TEMP (RM 427)
	1	TE-RC3B5	TE	RCS LOOP 1 HOT LEG TEMP (RM 402)
	2	TE-RC4A2	TE	RCS LOOP 2 COLD LEG TEMP (RM 427)
	1	TE-RC4B3	TE	RCP LOOP 1 COLD LEG TEMP (RM 402)
RCS	1	RC11	MOV	PORV BLOCK VLV
	2	RC13A	SV	RCS CODE SAFETY VALVE
	1	RC13B	SV	RCS CODE SAFETY VALVE
	1/2	RC147	MAN	PRESSURIZER VENT HEADER CONTROL VLV
	2	RC200	MOV	PZR SMPL CTMT VNT HDR VLV
	2	RC239A	MOV	PZR VAPOR SMPL VLV
	2	RC239B	MOV	PZR LIQUID SMPL VLV
	2	RC2A	SOV	PZR PORV
	1	RC4608A	SOV	SG 1 HI-PT VENT VLV
	1	RC4608B	SOV	SG 1 HI-PT VENT VLV
	2	RC4610A	SOV	SG 2 HI-PT VENT VLV
	2	RC4610B	SOV	SG 2 HI-PT VENT VLV
	2	RC4632	SOV	COLD LEG SG1-2 SMPL VLV
SFAS	1/2	RE2004	RE	CTMT Vessel Rad Monitor
	1/2	RE2005	RE	CTMT Vessel Rad Monitor
	1/2	RE2006	RE	CTMT Vessel Rad Monitor
	1/2	RE2007	RE	CTMT Vessel Rad Monitor
SFRCS	1/2	LLTSP9A6	LLT	SG2 CH 1 SU LEVEL XMTR
	1/2	LLTSP9A7	LLT	SG2 CH 3 SU LEVEL XMTR
	1/2	LLTSP9A8	LLT	SG2 CH 2 SU LEVEL XMTR
	1/2	LLTSP9A9	LLT	SG2 CH 4 SU LEVEL XMTR
	1/2	LLTSP9B6	LLT	SG1 CH 2 SU LEVEL XMTR
	1/2	LLTSP9B7	LLT	SG1 CH 4 SU LEVEL XMTR
	1/2	LLTSP9B8	LLT	SG1 CH 1 SU LEVEL XMTR
	1/2	LLTSP9B9	LT	SG1 CH 3 SU LEVEL XMTR

4.6.D.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
SFRCS	1/2	RCPM1	RCPM	CH 1 RCP MONITOR RELAY CONTACT
	1/2	RCPM2	RCPM	CH 2 RCP MONITOR RELAY CONTACT
	1/2	RCPM3	RCPM	CH 3 RCP MONITOR RELAY CONTACT
	1/2	RCPM4	RCPM	CH 4 RCP MONITOR RELAY CONTACT

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4.6.D.3 Fire Propagation Control

Fire Area D is comprised of the entire Containment, as shown on Drawing A-221F through A-229F.

A fire that originates in this fire area will be contained in this fire area.

This fire area is separated from Fire Areas A and AB (the East and West halves of the Annulus) by the steel pressure vessel. Based on the low combustible loading and the design of the pressure vessel, a fire will not spread from one side of the pressure vessel to the other.

There are several non-rated penetrations through the pressure vessel. These penetrations include the Equipment Hatch Personnel Air Lock, the Emergency Air Lock, the Transfer Tubes, Electrical Penetrations, and Piping Penetrations. Based on the design of these penetrations and the low combustible loadings, a fire will not propagate through one of these openings.

Other than cable insulation, the major combustible is the lube oil in the Reactor Coolant Pump Motors. The Reactor Coolant Pumps are provided with siesmically designed lube oil collection systems to collect any leakage from the RCP Motors, thereby reducing the potential for the oil to leak from one of the motors and start a fire.

4.6.D.4 Fire Detection and Suppression

Fire Area D consists of various rooms and/or areas. The following areas have detection.

1. Core Flooding Tank Area Room 214, Fire Detection Zone FDZ 214

2. Letdown Cooler Area Room 215, Fire Detection Zone FDZ 215

3. Steam Generator Area (West D-Ring) Room 216, Fire Detection Zones FDZ RCP-1, FDZ RCP-2

4. Steam Generator Area (East D-Ring) Room 218, Fire Detection Zones FDZ RCP-3, FDZ RCP-4, FDZ PSV-1

5. Incore Instrument Trench Area Room 220, Fire Detection Zone FDZ 220

6. Hatch Area Room 317, Fire Detection Zone FDZ 317

7. Passage Room 410, Fire Detection Zone FDZ 410

8. Pressurizer Valve Room, Room 580 Fire Detection Zone FDZ 410

Manual Fire Suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-221F through A-229F.

A 2½ hose connection is available on the Service Water System in containment that could be used for fire fighting. Three separate connections are provided on the 603’ Elev, near the Personnel Hatch, so that one will usually be available.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.D.5 Fire Area D Safe Shutdown Summary

In general, separation of Safe Shutdown and Associated Circuits of redundant trains is prevalent throughout most of Containment. For the most part, Train 1 circuits enter Containment from the West and Train 2 circuits primarily from the East. Consequently, Train 1 Safe Shutdown and Associated Circuits are basically confined to the West side of Containment while Train 2 circuits are primarily found in the East side. The few exceptions stem from a few Train 1 Safe Shutdown circuits that were routed into the predominantly Train 2 East penetration area.

Since the location of a fire could be on either the east or west side of Containment, and since Containment will not be immediately accessible, the following method was used to demonstrate compliance with Appendix R:

1. High/Low Interface valves and cables were evaluated.

    a. The PORV (RC2A) and Block Valve RC11 are separated by less than 20 ft. but dedicated conduit is used up to the electrical penetrations which are separated by more than 20 ft. Safe Shutdown does not require opening the PORV, and if it did open spuriously, there is physical separation for the circuits for RC11. It is considered incredible for a fire in the vicinity of the two valves to open the PORV due to the lack of a hot short power source; therefore, the installation of a radiant energy shield is not required.

    b. Letdown is isolated by manually closing MU03 outside of Containment.

    c. Decay Heat Suction Valves DH11 & 12 are closed and depowered.

    d. At least one steam generator primary High Point Vent valve will remain closed due to separation.

    e. Adequate time is available to manually isolate 3/4” sample and 1” vent paths to the Quench Tanks.

2. A minimum set of Safe Shutdown equipment was developed assuming the Makeup Pumps were used for inventory control and after 8-hours: Letdown, Seal Injection from MUPS, and Seal Return.

SYSTEM	TRN	COMPONENT	DESCRIPTION
CACS	1/2	C1-1, -2, -3	Containment Air Cooling Fan
NI	1	NI-5874A	Source Range Indicator
	2	NI-5875A	Source Range Indicator

FIRE AREA D

SYSTEM	TRN	COMPONENT	DESCRIPTION
NNI	1	LI-RC14-1	Pressurizer Level Indicator
	2	LI-RC14-2	Pressurizer Level Indicator
	2	LI-SP09A1	SG1-2 Startup Level Indicator
	1	LI-SP09B1	SG1-1 Startup Level Indicator
	2	PI-6365A	RCS Loop 2 Ext Range Press
	1	PI-6365B	RCS Loop 1 Ext Range Press
	2	PI-SP12A	SG1-2 Outlet Press Indicator
	1	PI-SP12B	SG1-1 Outlet Press Indicator
NNI	2	TI-RC3A5	RCS Loop 2 Hot Leg Temp
	1	TI-RC3B5	RCS Loop 1 Hot Leg Temp
	2	TI-RC4A4	RCS Loop 2 Cold Leg Temp
	1	TI-RC4B4	RCS Loop 1 Cold Leg Temp
RCS	1	RC11	PORV Block Valve
	2	RC200	Pzr Smpl CTMT Vnt HDR Valve
	2	RC2A	Pressurizer PORV

Safe Shutdown can be achieved with either train of the above equipment.

An exemption is requested for the lack of separation of cables and equipment and associated non-safety circuits by a horizontal separation of more than 20 ft. with no intervening combustibles or fire hazards as required per Section III.G.2 of Appendix R for non-inerted containments. The justification is provided in the notes for the CAC fans.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE		OP-02501 (TRIP P14-1 TRAIN 2 S/D	OP-02501 (TRIP P14-1 TRAIN 2 S/D	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE		OP-02501 (TRIP P14-2 TRAIN 1 S/D	OP-02501 (TRIP P14-2 TRAIN 1 S/D	14
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	14
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	14
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	14
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	14
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	14
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			N/A	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			N/A	14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	14
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1 TR 2 S/D)	OP-02501 (TRIP P14-1 TR 2 S/D)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2 TR 1 S/D)	OP-02501 (TRIP P14-2 TR 1 S/D)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	1PBE1401C 1PBE1401D MC0011 P1P3BI		MOD 85-0193 MOD 85-0193 EXEMPTION REQUEST (SEPARATION) MOD 85-0193	RADIANT ENERGY SHIELD (39029A) RADIANT ENERGY SHIELD (39028A) EXEMPTION REQUEST (SEPARATION) RADIANT ENERGY SHIELD (P1P3BI)	3 3 10 3
	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	2PBF1401C 2PBF1401D MC0012 P2P5FI		MOD 85-0193 MOD 85-0193 EXEMPTION REQUEST (SEPARATION) MOD 85-0193	USE CAC FAN 1 USE CAC FAN 1 USE CAC FAN 1 USE CAC FAN 1	10 10 10 10
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	3PBEF15C 3PBEF15D MC0013 P3P4CI		MOD 85-0193 MOD 85-0193 NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7
	E37-1	CAC COIL 1	HX	D	1	O/F	O	AS IS			N/A		EXEMPTION REQUEST (SEPARATION)	EXEMPTION REQUEST (SEPARATION)	10
	E37-2	CAC COIL 2	HX	D	2	O/F	O	AS IS			N/A		EXEMPTION REQUEST (SEPARATION)	EXEMPTION REQUEST (SEPARATION)	10
	E37-3	CAC COIL 3	HX	D	1/2	O/F	O	AS IS	E37-1, E37-2		N/A		NOT REQUIRED FOR S/D	NOT REQUIRED FOR S/D	7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1173D		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	11,13
											1PBE1173B		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	11,13
											MV1407A		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	11,13
											P1C2LI		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	11,13
											P1P2MI		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	11,13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2CBF1227D	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	25
											2PBF1227B	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	25
											MV14090	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	25
											P2C5GI	MU01A	OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	25
											P2P5FI		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	25
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	2CBF1228D	MU01B		OP-02501 (OPEN CC1409)	25
											2PBF1228B	MU01B		OP-02501 (OPEN CC1409)	25
											MV14100	MU01B		OP-02501 (OPEN CC1409)	25
											P2C5GI	MU01A		OP-02501 (OPEN CC1409)	25
											P2P5FI			OP-02501 (OPEN CC1409)	25
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1176D		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											1PBE1176B		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											MV1411A		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											P1C2LI		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											P1P2MI		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	28
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	30
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	30
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,30
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,30
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	2CBF1120D		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
											2CVCF01AD		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
											2PBF1120B		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
											MVCF01A		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
											P2C5GI	MU01A	OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
											P2P5FI		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1CBE1162D		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
											1CVCF01BD		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
											1PBE1162B		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
											MVCF01B		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
											P1C2LI		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
											P1P2MI		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22,11
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	2CBF1130D		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
											2PBF1130B		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
											MVDH11		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	P2C5GI	MU01A	OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
											P2P5FI		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183D		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
											1CBE1183H	PSHRC2B4	OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
											1PBE1183B		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
											MVDH12		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
											P1C2LI		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
											P1P2MI		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
											PSHRC2B4		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26,11
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	1CBE1155D			DH2736 REMAINS CLOSED	11,31
											1PBE1155B			DH2736 REMAINS CLOSED	11,31
											MV2735			DH2736 REMAINS CLOSED	11,31
											P1P2LI			DH2736 REMAINS CLOSED	11,31
											P1P2MI			DH2736 REMAINS CLOSED	11,31
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWF	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS

FIRE AREA : D

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			NA	
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			NA	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			NA	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			NA	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			NA	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			NA	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			NA	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			NA	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			NA	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**

LEGEND

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SAFE SHUTDOWN ANALYSIS

FIRE AREA : D

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			NA	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			NA	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			NA	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			NA	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			NA	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			NA	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			NA	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			NA	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			NA	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NA	
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NA	
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			NA	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			NA	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			NA	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			NA	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			NA	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			NA	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			NA	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			NA	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			NA	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	RC3716										NONE			NA	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			NA	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			NA	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			NA	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			NA	
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			NA	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			NA	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			NA	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			NA	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			LOST DUE TO BKR COORDINATION	21
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			NA	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			LOST DUE TO BKR COORDINATION	21
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			NA	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			NA	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			NA	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			NA	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			NA	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			NA	
	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			NA	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			NA	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			NA	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			NA	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			NA	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			NA	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	OP-02501 (TRIP P58-1)	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			NA	
	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			NA	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			NA	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			NA	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			NA	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			NA	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			NA	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			NA	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			NA	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			NA	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			NA	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			NA	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			NA	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			NA	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			NA	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NA	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NA	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			NA	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			NA	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			NA	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			NA	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			NA	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			NA	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			NA	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			NA	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			NA	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			NA	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			NA	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			NA	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			NA	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	12
	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			NA	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			NA	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			NA	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			NA	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			NA	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			NA	
MUPS	E25-1	LETDOWN COOLER 1-1	CLR	D	1	FUNC	FUNC	N/A		H	NONE			MECHANICAL COMPONENTS	35
	E25-2	LETDOWN COOLER 1-2	CLR	D	2	FUNC	FUNC	N/A		H	NONE			MECHANICAL COMPONENTS	35
	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			NA	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			NA	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1237D	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
											2CBF1237G	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
											2PBF1237B	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
											MVMU01A	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
											P2C5GI	MU01A	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
											P2P5FI		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	25
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1238D	CC1410		OP-02501 (OPEN MU01A)	25
											2CBF1238G	CC1410		OP-02501 (OPEN MU01A)	25
											2PBF1238B	CC1410		OP-02501 (OPEN MU01A)	25
											MVMU01B	CC1410		OP-02501 (OPEN MU01A)	25
											P2C5GI	MU01A		OP-02501 (OPEN MU01A)	25
											P2P5FI			OP-02501 (OPEN MU01A)	25
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1171D		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,25
											1PBE1171B		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,25
											MVMU02A		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,25
											P1C2LI		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,25
											P1P2MI		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13,25
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1172D		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											1CBE1172H	FTS3745B	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											1CBE1172I	FPSH3759	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											1CBE1172J	FPSH3763	OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											1PBE1172B		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											FPSH3759		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											FPSH3763		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											FTSH3745B		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											MVMU02B		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25,16
											P1C2LI		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25
											P1P2MI		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	25
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501(OPEN MU03)	OP-02501 (OPEN MU03)	25
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			NA	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
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SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1174D	2/TDC	OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	11,13
											1PBE1174B		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	11,13
											MVMU59A		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	11,13
											P1C2LI		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	11,13
											P1P2MI		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	11,13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1175D		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	11,13
											1PBE1175B		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	11,13
											MVMU59B		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	11,13
											P1C2LI		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	11,13
											P1P2MI		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	11,13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1177D		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	11,13
											1PBE1177B		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	11,13
											MVMU59C		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	11,13
											P1C2LI		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	11,13
											P1P2MI		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	11,13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1178D		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	11,13
											1PBE1178B		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	11,13
											MVMU59D		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	11,13
											P1C2LI		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	11,13
											P1PC2MI		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	11,13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			NA	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			NA	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			NA	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LNF5874A			ADEQUATE SEPARATION EXISTS	10
											1LNF5874B			ADEQUATE SEPARATION EXISTS	10
											NE5874			ADEQUATE SEPARATION EXISTS	10
											P1L5WI			ADEQUATE SEPARATION EXISTS	10
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	1LNF5874A			USE NI-5874A	32
											1LNF5874B			USE NI-5874A	32
											NE5874			USE NI-5874A	32
											P1L5WI			USE NI-5874A	32
	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	2LNF5875A			ADEQUATE SEPARATION EXISTS	10
											2LNF5875B			ADEQUATE SEPARATION EXISTS	10
											NE5875			ADEQUATE SEPARATION EXISTS	10
											P2L2CI			ADEQUATE SEPARATION EXISTS	10
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	2LRPSA03E			USE NI-5875A	32
											2LRPSA03X			USE NI-5875A	32
											2LRPSA03Y			USE NI-5875A	32
											2LRPSA03Z			USE NI-5875A	32
											C3902			USE NI-5875A	32
											C3912			USE NI-5875A	32
											NE-NI1			USE NI-5875A	32
											NT-NI1			USE NI-5875A	32
											P2L4GI			USE NI-5875A	32
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LRPSB03E			USE NI-5874A	32

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NI	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LRPSB03X			USE NI-5874A	32
											1LRPSB03Y			USE NI-5874A	32
											1LRPSB03Z			USE NI-5874A	32
											C3901			USE NI-5874A	32
											C3911			USE NI-5874A	32
											NE-NI2			USE NI-5874A	32
											NT-NI2			USE NI-5874A	32
											P1L1LI			USE NI-5874A	32
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			NONE	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NA	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	1LRC143Y			ADEQUATE SEPARATION EXISTS	10
											LT-RC14-3			ADEQUATE SEPARATION EXISTS	10
											P1L1LI			ADEQUATE SEPARATION EXISTS	10
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	2LRC141Y		MOD 85-0209	RADIANT ENERGY SHIELD (39274A)	3,10
											LT-RC14-1		MOD 85-0209	RADIANT ENERGY SHIELD(LT-RC14-1)	3,10
											P2L4GI			ADEQUATE SEPARATION EXISTS	10
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LRC143Y			USE LI-RC14-1	32
											LT-RC14-3			USE LI-RC14-1	32
											P1L1LI			USE LI-RC14-1	32
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	2LRC141Y			USE LI-RC14-2	32
											LT-RC14-1			USE LI-RC14-2	32
											P2L4GI			USE LI-RC14-2	32
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	2LSP09A3Z			ADEQUATE SEPARATION EXISTS	10
											LT-SP09A3			ADEQUATE SEPARATION EXISTS	10
											P2L4GI			ADEQUATE SEPARATION EXISTS	10
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	2LSP09A3Z			NOT REQUIRED FOR S/D	7
											LT-SP09A3			NOT REQUIRED FOR S/D	7
											P2L4GI			NOT REQUIRED FOR S/D	7
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT21C			USE LI-SP09A1	33
											LT-SP09A8			USE LI-SP09A1	33
											P2L4GI			USE LI-SP09A1	33
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT21C			USE LI-SP09A1	33

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	LTSP09A8 P2L4GI			USE LI-SP09A1 USE LI-SP09A1	33 33
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	2LSGLT41C LT-SP09A9 P2L4GI			USE LI-SP09A1 USE LI-SP09A1 USE LI-SP09A1	33 33 33
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LSP09B3Z P1L1LI			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	1LSP09B3Z LT-SP09B3 P1L1LI			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11D LI-SP09B8 P1L1LI			USE LI-SP09B1 USE LI-SP-09B1 USE LI-SP-09B1	32 32 32
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11D LT-SP09B8 P1L1LI			USE LI-SP09B1 USE LI-SP-09B1 USE LI-SP-09B1	32 32 32
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT31D LT-SP09B9 P1L1LI			USE LI-SP09B1 USE LI-SP09B1 USE LI-SP09B1	32 32 32
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	BLNNI153W LT-RC14-2 PBL4EI			USE LI-SP09A1 USE LI-SP09A1 USE LI-SP09A1	32 32 32
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	2LP6365AB P2L4GI PT6365A			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10 10
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	2LP6365AB P2L4GI PT6365A			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	1LP6365BB P1L1LI PT6365B			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10 10
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	1LP6365BB P1L1LI PT6365B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	4LSFPT41B P4L1GI PT-RC2A3			USE PI-6365A USE PI-6365A USE PI-6365A	32 32 32
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	2LSFPT21B P2L4GI PT-RC2A4			USE PI-6365A USE PI-6365A USE PI-6365A	32 32 32
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	3LSFPT31B P3L4SI PT-RC2B3			USE PI-6365B USE PI-6365B USE PI-6365B	32 32 32
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSFPT11B P1L1LI PT-RC2B4			USE PI-6365B USE PI-6365B USE PI-6365B	32 32 32
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	2LSP12A2Z			ADEQUATE SEPARATION EXISTS	10

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	P2L4GI PT-SP12A2			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	2LSP12A2Z P2L4GI PT-SP12A2			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	ALNNI852T PAL3DI PT-SP12A1			USE PI-SP12A USE PI-SP12A USE PI-SP12A	32 32 32
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSP12B1Z P1L1LI PT-SP12B1			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10 10
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	1LSP12B1Z P1L1LI PT-SP12B1			USE PI-SP12B USE PI-SP12B USE PI-SP12B	32 32 32
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	BLNNIL09T PBL3QI PT-SP12B2			USE PI-SP12B USE PI-SP12B USE PI-SP21B	32 32 32
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	2LTRC3A6A P2L4GI TE-RC3A6			USE TI-RC3A5 USE TI-RC3A5 USE TI-RC3A5	32 32 32
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	1LTR3B5A P1L1L1 TE-RC3B5			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10 10
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	BLNNI1154Y PBL1E1 TE-RC4A2			USE TI-RC4A4 USE TI-RC4A4 USE TI-RC4A4	32 32 32
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	ALNNI833Y PAL2NI TE-RC4B3			USE TI-RC4B4 USE TI-RC4B4 USE TI-RC4B4	32 32 32
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	2LRPSA07Z 2LRPSA07ZA P2L4GI TE-RC3A4			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	1LTRC3A5A P1L1LI TE-RC3A5			ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	10 10 10
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	2LTRC3A6A P2L4GI TE-RC3A6			USE TI-RC3A5 USE TI-RC3A5 USE TI-RC3A5	32 32 32
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	1LRPSB07Z P1L1LI TE-RC3B2			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	1LTRC3B5A P1L1LI TE-RC3B5			ADEQUATE SEPAREATION EXISTS ADEQUATE SEPARATION EXISTS ADEQUATE SEPARATION EXISTS	32 32 32
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	2LTRC3B6A 2LTRC3B6AA P2L4GI			USE TI-RC3B5 USE TI-RC3B5 USE TI-RC3B5	32 32 32

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	TE-RC3B6			USE TI-RC3B5	32
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	BLNNI154Y			USE TI-RC4A4	32
											PBL1EI			USE TI-RC4A4	32
											TE-RC4A2			USE TI-RC4A4	32
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	ALNNI833Z			ADEQUATE SEPARATION EXISTS	10
											PAL3DI			ADEQUATE SEPARATION EXISTS	10
											TE-RC4A4			ADEQUATE SEPARATION EXISTS	10
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	BLNNI154W			USE TI-RC4B4	32
											PBL3QI			USE TI-RC4B4	32
											TE-RC4B2			USE TI-RC4B4	32
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	ALNNI833X			ADEQUATE SEPARATION EXISTS	10
											PAL2NI			ADEQUATE SEPARATION EXISTS	10
											TE-RC4B4			ADEQUATE SEPARATION EXISTS	10
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602D			ADEQUATE SEPARATION FROM PORV	24
											1PBE1602B			ADEQUATE SEPARATION FROM PORV	24
											MVRC11			ADEQUATE SEPARATION FROM PORV	24
											P1C2LI			ADEQUATE SEPARATION FROM PORV	24
											P1P2MI			ADEQUATE SEPARATION FROM PORV	24
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			MECHANICAL COMPONENTS	36
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			MECHANICAL COMPONENTS	36
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE		OP-02501 (CLOSE RC147)	OP-02501 (CLOSE RC147)	27
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285N			OP-02501 (CLOSE RC147)	27
											2PBF1285M			OP-02501 (CLOSE RC147)	27
											MV0200			OP-02501 (CLOSE RC147)	27
											P2C5GI	MU01A		OP-02501 (CLOSE RC147)	27
											P2P5FI			OP-02501 (CLOSE RC147)	27
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126D			OP-02501 (CLOSE RC147)	27
											2PBF1126B			OP-02501 (CLOSE RC147)	27
											MV0239A			OP-02501 (CLOSE RC147)	27
											P2C5GI	MU01A		OP-02501 (CLOSE RC147)	27
											P2P5FI			OP-02501 (CLOSE RC147)	27
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127D			OP-02501 (CLOSE RC147)	27
											2PBF1127B			OP-02501 (CLOSE RC147)	27
											MV0239B			OP-02501 (CLOSE RC147)	27
											P2C5GI	MU01A		OP-02501 (CLOSE RC147)	27
											P2P5FI			OP-02501 (CLOSE RC147)	27
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2K			ADEQUATE SEPARATION FROM RC11	24
											2CVRC2N			ADEQUATE SEPARATION FROM RC11	24
											P2C5GI	MU01A		ADEQUATE SEPARATION FROM RC11	24
											P2P5FI			ADEQUATE SEPARATION FROM RC11	24
											SVRC2			ADEQUATE SEPARATION FROM RC11	24
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	1CV4608AA			SPURIOUS ACTUATION NOT POSSIBLE	23
											P1P3BI			SPURIOUS ACTUATION NOT POSSIBLE	23
											SV4608A			SPURIOUS ACTUATION NOT POSSIBLE	23
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BA			SPURIOUS ACTUATION NOT POSSIBLE	23
											P1C5SI			SPURIOUS ACTUATION NOT POSSIBLE	23
											SV4608B			SPURIOUS ACTUATION NOT POSSIBLE	23
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	2CV4610AA			SPURIOUS ACTUATION NOT POSSIBLE	23

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	P2P5FI SV4610A			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	23 23
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	2CV4610BA P2C5CI SV4610B			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	23 23 23
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632A JT3955 P2C5CI SV4632			OP-02501 (CLOSE RC147) OP-02501 (CLOSE RC147) OP-02501 (CLOSE RC147) OP-02501 (CLOSE RC147)	27 27 27 27
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			NA	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			NA	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			NA	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			NA	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			NA	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			NA	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11C P1L1LI			USE LI-SP09B1 USE LI-SP09B1	33 33
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31C P1L1LI			USE LI-SP09B1 USE LI-SP09B1	33 33
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21C P2L4GI			USE LI-SP09A1 USE LI-SP09A1	33 33
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41C P2L4GI			USE LI-SP09A1 USE LI-SP09A1	33 33
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21D P2L4GI			USE LI-SP09B1 USE LI-SP09B1	33 33
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41D P2L4GI			USE LI-SP09B1 USE LI-SP09B1	33 33
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11D P1L1LI			USE LI-SP09B1 USE LI-SP09B1	33 33
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31D			USE LI-SP09B1	33

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	P1L1LI			USE LI-SP09B1	33
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS ACTUATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS ACTUATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS ACTUATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS ACTUATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			NA	
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			NA	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			NA	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			NA	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			NA	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			NA	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			NA	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			NA	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			NA	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			NA	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			NA	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			NA	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			NA	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			NA	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			NA	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			NA	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			NA	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			NA	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			NA	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			NA	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			NA	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			NA	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MC0561	CTMT RECIRCULATIN FAN 1									APBE1169B			NOT REQUIRED FOR S/D	11
ASSCKT	MV0240A	RC PRZR SMPL VLV 1									1PBE1181B	E11B		NOT REQUIRED FOR S/D	11
ASSCKT	MV1567A	CC IN ISO VLV 1 TO CRD									1PBE1158B	E11B		NOT REQUIRED FOR S/D	11
ASSCKT	MV2012A	CTMT NORM SUMP ISO VLV									1PBE1108B	E11B		NOT REQUIRED FOR S/D	11
ASSCKT	MVCF02B	CF TANK 1 SAMPLE VALVE									1PBE1163B	E11B		NOT REQUIRED FOR S/D	11
ASSCKT	MVCF05B	CF TANK 1 VENT VALVE									1PBE1165B	E11B		NOT REQUIRED FOR S/D	11
ASSCKT	MV5011B	CTMT AIR SMPL ISO VLV									1PYE202B			LOST DUE TO BREAKER COORDINATION	21
ASSCKT	MV5011D	CTMT AIR SMPL ISO VLV									1PYE204B			LOST DUE TO BREAKER COORDINATION	21
ASSCKT	MV5010A	CTMT AIR SMPL ISO VLV									2PYF201B			LOST DUE TO BREAKER COORDINATION	21

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : D
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ASSCKT	MV5010C	CTMT AIR SMPL ISO VLV									2PYF203B			LOST DUE TO BREAKER COORDINATION	21

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA D TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA D TABLE 1 NOTES

9. NOT USED

10. An exemption is requested from the provisions of Appendix R, III.G.2, for separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 ft. with no intervening combustibles or fire hazards.

11. MCC E11B may trip due to a lack of coordination in associated circuit breakers. The following Safe Shutdown equipment powered from MCC E11B will be manually operated, if required:

CF01B	DH2735
CC1407A	MU02A & B
CC1411A	MU59A-D
DH12 (de-energized)	MCC YE2

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components:

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1, -2	LPI Pump 1, 2	On	Stop P42-1, -2 from CR after blocking SFAS
P56-1, -2	CS Pump 1, 2	On	Stop P56-1, -2 from CR after blocking SFAS
P58-1, -2	HPI Pump 1, 2	On	Stop P58-1, -2 from CR after blocking SFAS
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B

FIRE AREA D TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3869 is manually closed, first trip Breaker BE1146 at E11E.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Inventory Control and RCP Seal Integrity are maintained by re-establishing Seal Return, Seal Injection and RCS Letdown.

    RCP Seal Return, Seal Injection and Letdown Flow (after 8 hours). The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA D TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

MU02B	Trip Breaker BE1172 at E11B & open MU02B	MU10A MU11	Open Direct flow to CWRT

RCS Inventory Control

After transferring Makeup Suction to the BWST, MU203 (Train 2) or MU206 (Train 1) will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank or Clean Waste System to conserve water.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. YE2/YF2 associated circuits are not coordinated. This results in loss of YE2/YF2. The loss of this panel will cause a Reactor Trip via ARTS, which is acceptable.

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A, and CF01B before going below 700 psig.

23. The circuits for the Steam Generator Vent Valves RC4608A & B (SG1) and RC4610A & B (SG2) are routed in individual conduits up to the containment penetrations where the cables are exposed. The penetrations for RC4608A & B are separated by more than 20 ft. The penetrations for RC4610A & B are approximately 8 ft. apart (P2P5FI & P2C5CI on Drawing E-362).

    Penetration P2C5CI contains one other cable, 2CV4632A (E56B/47B 125V DC) for the normally closed and de-energized Cold Leg Sample Valve RC4632 which is also a dedicated conduit 39296A. Penetration P2P5FI contains approximately 20 other cables; however, only one valve needs to remain closed for the High/Low Pressure Interface. The details of the penetration boxes are shown on Drawings E376 and E378B and include covers which act like the conduit.

    Spurious operation of both valves in a train requires multiple hot shorts of the right polarity, for Train 1, this is incredible due to separation. For Train 2, this is incredible because there is not available power source for RC4610B. Also, the Makeup System is available and capable of maintaining RCS Inventory even if these valves did spuriously open.

24. The power and control cables for the PORV (RC2A) were routed in dedicated conduit (with no other cables) and repowered to Train 2 (E52B/13). The power and control cables for the PORV block Valve (RC11, Train 1) were also routed in dedicated conduit

FIRE AREA D TABLE 1 NOTES

which approaches the PORV and other Train 1 equipment and conduits within 20 ft. However, there is no other power source in the conduit or at the components which could credibly hot short and cause spurious operation. The Train 1 & 2 penetration boxes are widely separated by over 100 ft. and metal enclosed (E-376). There is no credible fire which could impair both boxes at the same time. Within the penetration, the PORV power cables are exposed and in close proximity to other train 2 circuits (See E-530).

In the unlikely event that a fire in or around the penetration did cause a spuriously PORV opening, the Block Valve would remain operable. Spurious closure of the PORV Block Valve is of no consequence for Safe Shutdown.

25. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

26. Decay Heat Suction Valves DH11 & DH12 are normally closed and required to be closed for High/Low Interface until going into DHR, at which time DH11 and DH12 are open and the valves depowered under normal plant operations. Generic Letter 86-10 states that for a high-low interface MOV, a hot short needs to be considered on all three phases in the proper sequence. The power cables (three-phase 480V) for DH11 and DH12 are routed in individual dedicated conduits in Containment until the conduits reach the Penetration Boxes. The Penetration Boxes are separated by over 100 ft. For a fire in Containment to damage both power cables such that each receive an internal hot short of the proper voltage and polarity without grounding is highly unlikely. Hence, a breach of this interface is not a concern. To go into DHR, manually open Bypass Valves DH21 & DH23 for Cold Shutdown.

27. Valves RC200, RC239A, RC239B and RC4632 may be affected by a fire in this area. Manual Valve RC147 (located in Containment, outside the D-Rings) will be closed to provide a High/Low Pressure Interface. This manual action need not be taken for 8-hours because the Quench Tank has sufficient capacity to hold the discharge from this line for at least 8-hours. The Makeup System is available and capable of maintaining RCS inventory with these valves open.

28. Essential CCW is provided to the Makeup Pumps, bypassing CC1460.

29. NOT USED

30. The DHR Cooler 1-1(1-2) Isolation Valve CC1467(CC1469) is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467(CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467(CC1469).

FIRE AREA D TABLE 1 NOTES

31. Failure of Circuit 1CBE1155D may result in spurious opening of DH2735. However, DH2736 is unaffected by a fire in this area and remains available for a High/Low Pressure Boundary Interface.

32. The following instrumentation may be lost, but in each case, there is redundant instrumentation available which is unaffected:

INSTRUMENT LOST	TRAIN	REDUNDANT INSTRUMENT
NI-5874C	1	NI-5874A
NI-NI1	2	NI-5875A
NI-NI2	1	NI-5874A
LI-RC14-3	1	LI-RC14-1
LI-RC14-4	2	LI-RC14-2
LRS-RC14	2	LI-SP09A1
PI-RC2A3	2	PI-6365A
PI-RC2A4	2	PI-6365A
PI-RC2B3	1	PI-6365B
PI-RC2B4	1	PI-6365B
PI-SP12A1-A	2	PI-SP12A
PI-SP12B1	1	PI-SP12B
PI-SP12B2	1	PI-SP12B
TE-RC3A6	2	TI-RC3A5
TE-RC4A2	2	TI-RC4A4
TI-RC4B3	1	TI-RC4B4
TI-RC3A6	2	TI-RC3A5
TI-RC3B6	1	TI-RC3B5
TI-RC4A2	2	TI-RC4A4
TI-RC4B2	1	TI-RC4B4

33. Level Indicators LI-SP09A1 and LI-SP09B1 remain available to monitor the level of each steam generator.

34. NOT USED

35. Letdown coolers 1 and 2 (E25-1 and E25-2) are passive mechanical components in an area with low combustible loading.

36. The Reactor Coolant System Code Safety Valves (RC13A and RC13B) are passive mechanical components in an area with low combustible loading.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: DD

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.DD.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
422A	CABLE SPREADING ROOM	129,035	Y	AUTO

……..

4.6.DD.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA DD

The following components are located in fire area DD.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION

NONE

……..

4.6.DD.3 Fire Propagation Control

Fire Area DD is the Cable Spreading Room (Room 422A), as shown on Drawing A-224F.

A fire that originates in this fire area will be contained in the fire area.

The floors, walls and ceilings are reinforced concrete or 12 inch concrete block construction having a fire resistance rating of 3-hours.

Not all of the structural steel in Room 422A is adequately fire-proofed. Analysis was performed which demonstrates that the structural steel in this area will not fail in a fire, based on the type of combustible loading (mainly cables) and the automatic wet-pipe sprinkler system.

4.6.DD.4 Fire Detection and Suppression

Fire Area DD is provided with an automatic fire detection system (FDZ 422A).

Fire Area DD is provided with a dual feed automatic wet-pipe sprinkler system.

Manual fire suppression equipment is provided for this area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-224F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.DD.5 Fire Area DD Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area DD. Safe Shutdown will be accomplished from the Auxiliary Shutdown Panel using the Makeup and Purification System (MUPS) for Reactor Coolant System inventory control, a Letdown path, and Seal Injection for RCP Seal Cooling. The RCP seals will be restaged using flow through the RCP Seal Return line.

SAFE SHUTDOWN ANALYSIS

FIRE AREA : DD

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146B		OP-02519 (CLOSE AF3869)	OP-02519 (CLOSE AF3869)	12
											1CBE1146F		OP-02519 (CLOSE AF3869)	OP-02519 (CLOSE AF3869)	12
											1CBE1146G		OP-02519 (CLOSE AF3869)	OP-02519 (CLOSE AF3869)	12
											1CBE1146H		OP-02519 (CLOSE AF3869)	OP-02519 (CLOSE AF3869)	12
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	1CD107F		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
											1CD107G		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	2CBF1201F			OP-02519 (TRIP P14-2)	14
											2CBF1201G			OP-02519 (TRIP P14-2)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	1CBE1160I			SPURIOUS CLOSURE NOT POSSIBLE	15
											JT5721			SPURIOUS CLOSURE NOT POSSIBLE	15
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	1CLY6453A		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											1CLY6453B		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											1LLC6452B		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	1CLC6459B			NOT REQUIRED FOR S/D	7
											1CLC6459H			NOT REQUIRED FOR S/D	7
											1LLC6459A			NOT REQUIRED FOR S/D	7
											JT5721			NOT REQUIRED FOR S/D	7
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	1CAFPT01B		OP-02519(CONTROL ICS038B AT ASP)	OP-02519(CONTROL ICS038B AT ASP)	16
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1CD135G		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
											1CD135I		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
											JT5721		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271B			OP-02519 (TRIP P14-2)	18
											1CBE1271G			OP-02519 (TRIP P14-2)	18
											1CBE1271H			OP-02519 (TRIP P14-2)	18
											1CBE1271J			OP-02519 (TRIP P14-2)	18
											JT5721			OP-02519 (TRIP P14-2)	18
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188G			OP-02519 (TRIP P14-2)	18
											2CBF1188H			OP-02519 (TRIP P14-2)	18
											2CBF1188J			OP-02519 (TRIP P14-2)	18
											2CBF1188K	PSL4931B		OP-02519 (TRIP P14-2)	18
											2CBF1188L			OP-02519 (TRIP P14-2)	18
											2CBF1188M			OP-02519 (TRIP P14-2)	18
											JT5722			OP-02519 (TRIP P14-2)	18
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	1CV5889AB		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AC		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AG		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AH		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02519 (TRIP ICS38D)	OP-02519 (TRIP ICS38D)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	BCAD210D		OP-2501 (ENSURE DISCH VLV CLSD)	OP-2501 (ENSURE DISCH VLV CLSD)	74
											BCAD210E		OP-2501 (ENSURE DISCH VLV CLSD)	OP-2501 (ENSURE DISCH VLV CLSD)	74
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	1CBE1401G		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											1CBE1401J		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											1CBE1401K		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CACS	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	1CBE1501F			NOT REQUIRED FOR S/D	7
											1CBE1501G			NOT REQUIRED FOR S/D	7
											1CBE1501H			NOT REQUIRED FOR S/D	7
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1173E	KA,KB	OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
											1CBE1173G		OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1158E		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
											2CBF1158G		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2CBF1227F	MU01A	OP-02519 (OPEN CC1409)	OP-02519 (OPEN CC1409)	21
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	2CBF1228F	MU01B		OP-02519 (OPEN CC1409)	21
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1176E	KA,KB	OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											1CBE1176G		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											1CLR3757A		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											1CLR3757B		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1159E		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											2CBF1159G		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											2CBF1159H	LSLL/X1	OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											2CLR3758A		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											2CLR3758B		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	2CSF1724A		MOD 88-0145	BYPASSING CC1460	66
											2CV1460D		MOD 88-0145	BYPASSING CC1460	66
											2CV1460E		MOD 88-0145	BYPASSING CC1460	66
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	1CV1467C		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
											1CV1467E		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	1CSF1714A			OP-02519 (OPERATE CC42, CC43)	24,26
											1CV1495C			OP-02519 (OPERATE CC42, CC43)	24,26
											1CV1495E			OP-02519 (OPERATE CC42, CC43)	24,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	1CBE1161F		OP-02519 (OPEN CC2645)	OP-02519 (OPEN CC2645)	23
											1CLR3757A		OP-02519 (OPEN CC2645)	OP-02519 (OPEN CC2645)	23
											1CLR3757B		OP-02519 (OPEN CC2645)	OP-02519 (OPEN CC2645)	23
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE CC42)	OP-02501(CLOSE CC42)	24,26
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	24,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CBE1226F		OP-02519 (OPEN CC5095)	OP-02519 (OPEN CC5095)	27
											1CLR3757A		OP-02519 (OPEN CC5095)	OP-02519 (OPEN CC5095)	27
											1CLR3757B		OP-02519 (OPEN CC5095)	OP-02519 (OPEN CC5095)	27
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	1CBE1227E		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
											1CBE1227F		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
											1CLR3757A		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
											1CLR3757B		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	1CAC113B		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	1CAC113C		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
											1CAC113E		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	1CAC108B			NOT REQUIRED FOR S/D	7
											1CAC108C			NOT REQUIRED FOR S/D	7
											1CAC108H			NOT REQUIRED FOR S/D	7
											1CAC108I			NOT REQUIRED FOR S/D	7
											1CACD2C			NOT REQUIRED FOR S/D	7
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	2CBF1120F		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											2CBF1120G	PSH7529A	OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											2CVCF01AB		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1CBE1162F		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											1CBE1162G	PSH7530A	OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											1CVCF01BB		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209C			NOT REQUIRED FOR S/D	30
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216E			NOT REQUIRED FOR S/D	30
											1CCEAC1C			NOT REQUIRED FOR S/D	30
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			NOT REQUIRED FOR S/D	30
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	1CBE1156H			OP-02519 (TRIP P56-1)	31
											1CBE1156J			OP-02519 (TRIP P56-1)	31
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147H			OP-02519 (TRIP P56-2)	31
											2CBF1147J			OP-02519 (TRIP P56-2)	31
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111B		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											1CBE111C		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											1CBE111E		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	2CBF111B		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											2CBF111C		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											2CBF111E		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											2CBF111F		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	1CBE1106F			SPURIOUS CLOSURE NOT POSSIBLE	32
											1CBE1106J			SPURIOUS CLOSURE NOT POSSIBLE	32
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	1CBE1157F			VALVE DE-ENERGIZED	34
											1CBE1157G			VALVE DE-ENERGIZED	34
											1CBE1157I			VALVE DE-ENERGIZED	34
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142E		MOD 89-0089	DE-ENERGIZED	34
											2CBF1142F		MOD 89-0089	DE-ENERGIZED	34
											2CBF1142H		MOD 89-0089	DE-ENERGIZED	34
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112E		MOD 89-0089	DE-ENERGIZED	34
											1CBE1112F		MOD 89-0089	DE-ENERGIZED	34
											1CBE1112H		MOD 89-0089	DE-ENERGIZED	34
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	2CBF1130E	PSH7531A/K03	OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											2CBF1130G		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											2CBF1130J		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											2CBF1130K		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183G		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183J		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	1CVDH13BB			SPURIOUS ACTUATION NOT POSSIBLE	5C
											1CVDH13BE			SPURIOUS ACTUATION NOT POSSIBLE	5C
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	1CVDH14BB			SPURIOUS ACTUATION NOT POSSIBLE	5C
											1CVDH14BE			SPURIOUS ACTUATION NOT POSSIBLE	5C
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	1CBE1126C		OP-02519 (OPEN DH1517)	OP-02519 (OPEN DH1517)	36
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	1CBE1121C		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
											1CBE1121H		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	1CBE1155F			SPURIOUS OPEN NOT CREDIBLE	38
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	2CBF1125F			SPURIOUS OPEN NOT CREDIBLE	38
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	1CBE1187F		OP-02519 (VERIFY DH64 CLOSED)	OP-02519 (VERIFY DH64 CLOSED)	39
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112B		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											1CAC112C		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											1CAC112F		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	2CAD112B		OP-02519 (TRIP P42-2)	OP-02519 (TRIP P42-2)	31
											2CAD112C		OP-02519 (TRIP P42-2)	OP-02519 (TRIP P42-2)	31
											2CAD112F		OP-02519 (TRIP P42-2)	OP-02519 (TRIP P42-2)	31
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	1CGD104B		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
											1CGD104C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
											1CGD104E		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	1CGD101L		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD101N		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD103E		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD103F		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD105A		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD106A		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	BCHBBDA			NOT REQUIRED FOR S/D	7
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	1CABDC1C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CABDC1L		ECP 05-0105	OP-02519 (TRANSFER LOCALLY)	44
											1CAC101C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC101D		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC1033A		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC1033B		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC103A		MOD 88-0254	OP-02519 (TRANSFER LOCALLY)	44
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	1CAC110C			NOT REQUIRED FOR S/D	7
											ACAACC2C			NOT REQUIRED FOR S/D	7
											ACAACC2H			NOT REQUIRED FOR S/D	7
											ACAC2032A			NOT REQUIRED FOR S/D	7
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	1CY108AA		MOD 84-0116 (FCN 10170)	REROUTE OUTSIDE AREA	45
											1CY108AC				
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	2CY211A			LOSS OF INDICATION	5A
											2CY211B			LOSS OF INDICATION	5A
											2CY419A			LOSS OF INDICATION	5A
	C5708	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			LOSS OF INDICATION	5A
											1CY112B			LOSS OF INDICATION	5A
	C5709	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112C			LOSS OF INDICATION	5A
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			LOSS OF INDICATION	5A
											1CY112B			LOSS OF INDICATION	5A
											1CY112C			LOSS OF INDICATION	5A
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	1CY116A			LOSS OF INDICATION	5A
											2CY212A			LOSS OF INDICATION	5A
											2CY212B			LOSS OF INDICATION	5A
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	2CD2P19A			SFAS ACTUATES	31
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATES	31
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	BCYBU51A				
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	APYAU26A			OP-02519 (MONITOR NNI'S AT ASP)	46
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	1CY115B			SFRCS ACTUATES	47
											1CYE211A			SFRCS ACTUATES	47
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	1CY121A			SFRCS ACTUATES	47
											1CY121B			SFRCS ACTUATES	47

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : DD

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	1PD1P11A			SFRCS ACTUATES	47
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	1CD1P18A			SFAS ACTUATES	31
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATES	31
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY106A		MOD 84-0116/OP-02519	OP-02519 (MONITOR FLUX C4808)	48
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY1A105A			OP-02519 (MONITOR NNI'S AT ASP)	46
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CD1P19A 3CY307A			SFAS ACTUATES SFAS ACTUATES	31 31
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CDCP18A 4CY407A			SFAS ACTUATES SFAS ACTUATES	31 31
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	2CY215B 2CY221B 2CYF211A			SFRCS ACTUATES SFRCS ACTUATES SFRCS ACTUATES	47 47 47
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY107AA 1CY109AA			OP-02519 (MONITOR NNI'S AT ASP) LOSS OF POWER TO RC4608A, B)	46 60
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			NOT REQUIRED FOR S/D	30
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			NOT REQUIRED FOR S/D	30
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	1CY117A			NOT REQUIRED FOR S/D	5D
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	1CAC11CED 1CAC11CEF 1CAC12CED 1CAC12CEF 1CBCE11B 1CBCE12B		OP-02519 (TRANSFER LOCALLY) OP-02519 (TRANSFER LOCALLY) OP-02519 (TRANSFER LOCALLY) OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY) LOSS OF INDICATION ONLY OP-02519 (TRANSFER LOCALLY) LOSS OF INDICATION ONLY OP-02519 (TRANSFER LOCALLY) OP-02519 (TRANSFER LOCALLY)	44 44 44 44 44 44
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	BCAD2DF7D BCAD2DF7F BCBDF7B BCBF7A			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	BCYBU41A			OP-02519 (OPEN WC1747)	10,53
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	1CD1P21A 1CD1P21B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	5D 5D
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			NOT REQUIRED FOR S/D	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			LOST DUE TO LACK OF COORDINATION	67
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	1CBE1103F 1CBE1103G			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	11 11
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	1CBE1105F 1CBE1105G			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	11 11
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	1CBE1286F			NOT REQUIRED FOR S/D	11
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	1CBE1296C			NOT REQUIRED FOR S/D	11
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	1CD106B 1CD106D			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	11 11
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	1CAC111B 1CAC111C 1CAC111F		OP-02519 (TRIP P58-1) OP-02519 (TRIP P58-1) OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1) OP-02519 (TRIP P58-1) OP-02519 (TRIP P58-1)	11,31 11,31 11,31
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	2CAD111B 2CAD111C 2CAD111F		OP-02519 (TRIP P58-2) OP-02519 (TRIP P58-2) OP-02519 (TRIP P58-2)	OP-02519 (TRIP P58-2) OP-02519 (TRIP P58-2) OP-02519 (TRIP P58-2)	31 31 31
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	1CBE1240E			OP-02519 (OPEN HV5305B)	49
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	1CBE1241E		OP-02519 (OPEN HV5305B)	OP-02519 (OPEN HV5305B)	49
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	1CVCS11BC		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											1CVCS11BE		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											JT5721		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	1CFV100DH		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV100DJ		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV100EG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV100AE		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV100B		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV100BG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CRSCC12A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CRSCC14A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											JT5722		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	2CRCSCC12A			SPURIOUS OPENING NOT POSSIBLE	5C
											2CRCSCC14A			SPURIOUS OPENING NOT POSSIBLE	5C
											2CV1001C			SPURIOUS OPENING NOT POSSIBLE	5C
											2CV1001F			SPURIOUS OPENING NOT POSSIBLE	5C
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	1CFV101AE		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV101B		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV101BG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CRSCC11A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CRSCC13A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV101DH		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV101EG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											JT5721		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CRSCC11A			SPURIOUS OPENING NOT POSSIBLE	5C
											1CRSCC13A			SPURIOUS OPENING NOT POSSIBLE	5C
											1CV1011C			SPURIOUS OPENING NOT POSSIBLE	5C
											1CV1011F			SPURIOUS OPENING NOT POSSIBLE	5C
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02519 (OPEN HP1556)	OP-02519 (OPEN HP1556)	52
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			NOT REQUIRED FOR S/D	7
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02519 (OPEN HP29)	OP-02519 (OPEN HP29)	52

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : DD

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1237F 2CBF1237K	CC1409 CC1409	OP-02519 (OPEN MU01A) OP-02519 (OPEN MU01A)	OP-02519 (OPEN MU01A) OP-02519 (OPEN MU01A)	10,71 10,71
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1238F 2CBF1238K	CC1410 CC1410		OP-02519 (OPEN MU01A) OP-02519 (OPEN MU01A)	71 71
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1171F 1CBE1171G		OP-02519 (OPEN MU02A) OP-02519 (OPEN MU02A)	OP-02519 (OPEN MU02A) OP-02519 (OPEN MU02A)	10,31 10,31
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1172F		OP-02519 (OPEN MU02B)	OP-02519 (OPEN MU02B)	10,41
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	2CSF1744A 2CVMU03C 2CVMU03E		OP-02519 (CLOSE/OPEN MU03) OP-02519 (CLOSE/OPEN MU03) OP-02519 (CLOSE/OPEN MU03)	OP-02519 (CLOSE/OPEN MU03) OP-02519 (CLOSE/OPEN MU03) OP-02519 (CLOSE/OPEN MU03)	10,31 10,31 10,31
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	ACBE2259C		OP-02519 (OPEN MU04)	OP-02519 (OPEN MU04)	10,68
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	ACBE2262C		OP-02519 (OPEN MU10A)	OP-02519 (OPEN MU10A)	10,53
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2263C			NOT REQUIRED FOR S/D	7
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	ACBE2278C ACBE2278I ACBE2278J ACBE2278L	 FYIC-MU39 86/FB 	OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT)	OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT) OP-02519 (ALIGN TO CWRT)	10,53 10,53 10,53 10,53
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02519 (CLOSE MU182)	OP-02519 (CLOSE MU182)	10,53
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BCNNI261C BCNNI264A BCY36218A BLNNI261D BLNNI264B			OP-02519 (OPERATE MU214 & MU216) OP-02519 (OPERATE MU214 & MU216) OP-02519 (OPERATE MU214 & MU216) OP-02519 (OPERATE MU214 & MU216) OP-02519 (OPERATE MU214 & MU216)	10,53 10,53 10,53 10,53 10,53
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2271C			NOT REQUIRED FOR S/D	7
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02519(CLOSE MU206)	OP-02519(CLOSE MU206)	52
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN MU208)	OP-02519 (OPEN MU208)	52
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02519 (CLOSE MU214)	OP-02519 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02519 (THROTTLE MU216)	OP-02519 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	2CVMU38C 2CVMU38D 2CVMU38E		OP-02519 (OPEN MU38) OP-02519 (OPEN MU38) OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38) OP-02519 (OPEN MU38) OP-02519 (OPEN MU38)	10,31 10,31 10,31
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1174F 1CBE1174G	2/TDC KA,KB	OP-02519 (OPEN MU59A) OP-02519 (OPEN MU59A)	OP-02519 (OPEN MU59A) OP-02519 (OPEN MU59A)	10,31 10,31
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1175F 1CBE1175G	 KA,KB	OP-02519 (OPEN MU59B) OP-02519 (OPEN MU59B)	OP-02519 (OPEN MU59B) OP-02519 (OPEN MU59B)	10,31 10,31
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1177F 1CBE1177G	 KA,KB	OP-02519 (OPEN MU59C) OP-02519 (OPEN MU59C)	OP-02519 (OPEN MU59C) OP-02519 (OPEN MU59C)	10,31 10,31
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1178F 1CBE1178G	 KA,KB	OP-02519 (OPEN MU59D) OP-02519 (OPEN MU59D)	OP-02519 (OPEN MU59D) OP-02519 (OPEN MU59D)	10,31 10,31
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	1CBE1127A 1CBE1127C ACHILOWAA		OP-02519 (ALIGN MU6405 TO BWST) OP-02519 (ALIGN MU6405 TO BWST) OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST) OP-02519 (ALIGN MU6405 TO BWST) OP-02519 (ALIGN MU6405 TO BWST)	10,53 10,53 10,53

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	ACHILOWAB		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											ACHILOWAC		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											JT5721		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	1CV6407C		OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
											1CV6407D		OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
											JT5721		OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1208A		OP-02519(OPEN MU6408)	OP-02519(OPEN MU6408)	53
											2CBF1208C		OP-02519(OPEN MU6408)	OP-02519(OPEN MU6408)	53
											JT5722		OP-02519(OPEN MU6408)	OP-02519(OPEN MU6408)	53
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	1CBE1147A		OP-02519 (OPEN MU6409)	OP-02519 (OPEN MU6409)	10,53
											JT5721		OP-02519 (OPEN MU6409)	OP-02519 (OPEN MU6409)	10,53
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	1CBE1295A		OP-02519 (OPEN MU6422)	OP-02519 (OPEN MU6422)	10,53
											JT5721		OP-02519 (OPEN MU6422)	OP-02519 (OPEN MU6422)	10,53
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	2CBF1616A		OP-02519(OPEN MU6420)	OP-02519(OPEN MU6420)	53,73
											2CBF1616C		OP-02519(OPEN MU6420)	OP-02519(OPEN MU6420)	53,73
											JT5722		OP-02519(OPEN MU6420)	OP-02519(OPEN MU6420)	53,73
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	1CBE1194A		OP-02519 (CLOSE MU6421)	OP-02519 (CLOSE MU6421)	10,53
											1CBE1194H		OP-02519 (CLOSE MU6421)	OP-02519 (CLOSE MU6421)	10,53
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1108A		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
											2CBF1108F		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
											2CBF1108H		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1748A		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											2CVMU66AB		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											2CVMU66AD		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1736A	KA,KB	OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											1CVMU66BB	KA,KB	OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											1CVMU66BD		OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1737A	KA,KB	OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											1CVMU66CB	KA,KB	OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											1CVMU66CD		OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1749A	KA,KB	OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											2CVMU66DB		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											2CVMU66DD		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02519 (OPEN MU97)	OP-02519 (OPEN MU97)	10,53
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACBE1191B		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	ACD117B			NOT REQUIRED FOR S/D	54
											ACD117C			NOT REQUIRED FOR S/D	54
											ACD117D			NOT REQUIRED FOR S/D	54
											ACD117G	AC105		NOT REQUIRED FOR S/D	54
											ACD117H			NOT REQUIRED FOR S/D	54
											ACD117I			NOT REQUIRED FOR S/D	54
											ACD117J			NOT REQUIRED FOR S/D	54
											ACD117K			NOT REQUIRED FOR S/D	54
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACBE1192C		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACAC105B		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											ACAC105C		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											ACAC105L		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACAC105M		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN WC119)	OP-02519 (OPEN WC119)	10,53
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN WC120)	OP-02519 (OPEN WC120)	10,53
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	ACV1453D ACV1453F ACV1453G		OP-02519 (CLOSE WC1453) OP-02519 (CLOSE WC1453) OP-02519 (CLSOE WC1453)	OP-02519 (CLOSE WC1453) OP-02519 (CLOSE WC1453) OP-02519 (CLOSE WC1453)	10,53 10,53 10,53
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743G		OP-02519 (OPEN WC1743)	OP-02519 (OPEN WC1743)	10,53
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	BCV1747G		OP-02519 (OPEN WC1747)	OP-02519 (OPEN WC1747)	10,53
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	ACV3560C ACV3560D		OP-02519 (OPEN WC3560) OP-02519 (OPEN WC3560)	OP-02519 (OPEN WC3560) OP-02519 (OPEN WC3560)	10,53 10,53
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LNF5874G			USE NI-5874C	48
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE		OP-02519 (MONITOR AT C4808)	OP-02519 (MONITOR AT C4808)	48
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LRPSB03A 1LRPSB03B 1LRPSB03C ALNI1201			USE NI-5874C USE NI-5874C USE NI-5874C USE NI-5874C	48 48 48 48
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU31A 2LLMU31B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU34A 2LLMU34B			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	1LL6425B JT5721			OP-02519 (MONT LI-RC14-1 AT ASP) OP-02519 (MONT LI-RC14-1 AT ASP)	55 55
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	1LL6435B JT5721			OP-02519 (MONT LI-RC14-1 AT ASP) OP-02519 (MONT LI-RC14-1 AT ASP)	55 55
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03CB			NOT REQUIRED FOR S/D	7
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03DB			NOT REQUIRED FOR S/D	7
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LRC143C			USE LI-RC14-1	56
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LSP09B3C			USE LI-SP09B3	56
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11B LI-SP09B8			USE LI-SP09B3 USE LI-SP09B3	56 56
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11B 1LSGLT11E			USE LI-SP09B3 USE LI-SP09B3	56 56

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	LI-SP09B8A			USE LI-SP09B3	56
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT31B			USE LI-SP09B3	56
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	1LP6365BD 1LP6365BE			USE PI-6365B1 USE PI-6365B1	56 56
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	3LSFPT31A ALSF1603A			USE PI-6365B1 USE PI-6365B1	56 56
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSF1602A 1LSFPT11A			USE PI-6365B1 USE PI-6365B1	56 56
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSP12B1B			USE PI-SP12B1	56
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	BLNNIL09B BLSP12B2A JT5722			USE PI-SP12B1 USE PI-SP12B1 USE PI-SP12B1	56 56 56
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			OP-02519 (MONITOR IN ROOM 314)	57
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE		MOD 83-0153/OP-02519	OP-02519 (MONITOR IN ROOM 303)	57
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			OP-02519 (MONITOR IN ROOM 314)	57
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	ALNNI833B		MOD 83-0153/OP-02519	OP-02519 (MONITOR IN ROOM 303)	57
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	1LRPSB07A 1LRPSB07B			USE TE-RC3B5 USE TE-RC3B5	57 57
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	1LTRC3B5B 1LTRC3B5C			USE TE-RC3B5 USE TE-RC3B5	57 57
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	2LTRC3B6B 2LTRC3B6C			USE TE-RC3B5 USE TE-RC3B5	57 57
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	BLNNI154D			USE TE-RC4B3	57
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	ALNNI833B ALNNI833C			USE TE-RC4B3 USE TE-RC4B3	57 57
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602K		OP-02519 (CLOSE RC11)	OP-02519 (CLOSE RC11)	58
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE		OP-02519 (CLOSE RC147)	OP-02519 (CLOSE RC147)	59
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285G		MOD 84-0185	OP-02519 (CLOSE RC147)	59
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126F 2CBF1126G 2CBF1126H			OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147)	59 59 59
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127F 2CBF1127G			OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147)	59 59
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2L 2CVRC2M			USE RC11 USE RC11	58 58

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : DD

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	BCVRC2H BCVRC2P			USE RC11 USE RC11	58 58
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	1CV4608AC 1CV4608AD			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BC			SPURIOUS ACTUATION NOT POSSIBLE	60
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	2CV4610AC 2CV4610AD			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	2CV4610BC			SPURIOUS ACTUATION NOT POSSIBLE	60
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632B 2CV4632D 2CV4632F			OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147)	59 59 59
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATED	31
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATED	31
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	3CY307A			SFAS ACTUATED	31
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	4CY407A			SFAS ACTUATED	31
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	1CLY6453A 1CLY6453B			SFAS ACTUATED SFAS ACTUATED	31 31
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	2CLY6454A 2CLY6454B			SFAS ACTUATED SFAS ACTUATED	31 31
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	ALSF5811A			SFAS ACTUATED	31
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	BLSF5821A			SFAS ACTUATED	31
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			SFAS ACTUATED	31
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ACTUATED	31
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ACTUATED	31
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ACTUATED	31
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	ALSF5812A			SFAS ACTUATED	31
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	BLSF5822A			SFAS ACTUATED	31

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	1LSFPT12A			SFAS ACTUATED	31
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	2LSFPT22A			SFAS ACTUATED	31
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	3LSFPT32A			SFAS ACTUATED	31
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	4LSFPT42A			SFAS ACTUATED	31
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	ALSF5813A			SFAS ACTUATED	31
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	BLSF5823A			SFAS ACTUATED	31
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	2CRC2121A 2CRC2121B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	2CRC2141A 2CRC2141B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	1CRC2111A 1CRC2111B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	1CRC2131A 1CRC2131B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC21A 1CRSCC23A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC21A 1CRSCC23A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11A			SFRCS ACTUATED	47
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31A			SFRCS ACTUATED	47
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21A			SFRCS ACTUATED	47
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41A			SFRCS ACTUATED	47
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21B			SFRCS ACTUATED	47
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41B			SFRCS ACTUATED	47
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11B			SFRCS ACTUATED	47
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31B			SFRCS ACTUATED	47

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD21B			SFRCS ACTUATED	47
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD41B			SFRCS ACTUATED	47
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD11C 1CRCPD11D			SFRCS ACTUATED SFRCS ACTUATED	47 47
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD31C			SFRCS ACTUATED	47
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD11B 1CRCPD11E			SFRCS ACTUATED SFRCS ACTUATED	47 47
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD31B			SFRCS ACTUATED	47
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD21C			SFRCS ACTUATED	47
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD41C			SFRCS ACTUATED	47
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM11B 1CRCPM11C			SFRCS INITIATION ON LOOP SFRCS INITIATION ON LOOP	47 47
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM21B			SFRCS INITIATION ON LOOP	47
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM31B			SFRCS INITIATION ON LOOP	47
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM41B			SFRCS INITIATION ON LOOP	47
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	ACAC201B ACAC201C			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107B		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DD
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107C		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC107F		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	1CAC109B		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109C		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109D		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109G		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CACD4E		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	1CV1356D		OP-02519 (OPEN SW1356)	OP-02519 (OPEN SW1356)	62
											1CV1356E		OP-02519 (OPEN SW1356)	OP-02519 (OPEN SW1356)	62
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	1CV1358AG			SW325 REMAINS CLOSED	72
											1CV1358AH			SW325 REMAINS CLOSED	72
											1CV1358AI			SW325 REMAINS CLOSED	72
											1CV1358AJ			SW325 REMAINS CLOSED	72
											1CV1358AK			SW325 REMAINS CLOSED	72
											1CV1358AL			SW325 REMAINS CLOSED	72
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	1CBE1142F		OP-02519 (OPEN SW1366)	OP-02519 (OPEN SW1366)	62
											1CBE1142G		OP-02519 (OPEN SW1366)	OP-02519 (OPEN SW1366)	62
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	1CBE1207E			SW325 REMAINS CLOSED	72
											1CBE1207F			SW325 REMAINS CLOSED	72
											2CBF1224E			SW325 REMAINS CLOSED	72
											2CBF1224F			SW325 REMAINS CLOSED	72
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	1CBE1218F		OP-02519 (XFER CONTRL TO ASP)	OP-02519 (XFER CONTRL TO ASP)	63
											JT5721		OP-02519 (XFER CONTRL TO ASP)	OP-02519 (XFER CONTRL TO ASP)	63
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277E		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
											1CBE1277G		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	1CV1424D		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
											1CV1424G		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	1CV1429B			NOT REQUIRED FOR S/D	7
											1CV1429C			NOT REQUIRED FOR S/D	7
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232F			NOT REQUIRED FOR S/D	30
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	1CBE1281F			ONE VALVE NO AND DEPOWERED	65
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	1CBE1282F			ONE VALVE NO AND DEPOWERED	65
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64
ASSCKT	CFP05Q	BWST HEAT TRACING									3CY310A			LOST DUE TO BREAKER COORDINATION	69
ASSCKT	C5763F	RPS-3 CABINET									3CY308A			LSOT DUE TO BREAKER COORDINATION	69
ASSCKT	C5784C	ARTS CABINET									3CY312A			LOST DUE TO BREAKER COORDINATION	69
ASSCKT	C5760A	CTRM CABINET									3CY313A			LOST DUE TO BREAKER COORDINATION	69
ASSCKT	Y3VM	VOLTMETER AT C5715									ACY3VMA			LOST DUE TO BREAKER COORDINATION	69

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA DD TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, partial suppression, and exemption request.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the three-phase motor-operated component are the same, spurious operation is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals, the minimum requirements of NRC IEN 84-09 are met).

      (This note cannot be referenced for control circuits susceptible to maloperation due to shorts, opens, or grounds or to High/Low Interface valves where multiple faults are considered).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1 and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA DD TABLE 1 NOTES

9. NOT USED

10. RCP Seal Integrity is maintained by re-establishing Seal Return, Seal Injection and Letdown. Inventory Control will be maintained using Makeup Train 1 and Letdown.

11. MUPS is assured for SSD; therefore this component is not needed for SSD.

12. The AFW Pump 1 Discharge to SG 2 Valve AF3869 is normally closed. This valve could spuriously open and will need to be manually closed to prevent overfilling SG-2, after operating the LOCAL/REMOTE disconnect switch in CDE11E.

13. The AFW Pump 1 Discharge to SG 1 Valve AF3870 is normally open and required to be open for Safe Shutdown. This valve could spuriously close thereby stopping flow to SG 1. Therefore, Trip Breaker D107 at D1PA and open AF3870.

14. AFW Pump 2 Discharge to SG 1 Valve AF3871 is normally closed. This valve could spuriously open. AFW Pump 2 Discharge to SG 2 Valve AF3872 is normally open and AFPT 2 P14-2 could start on SFRCS actuation. In order to avoid overfilling either steam generator, trip the throttle valve on AFPT 2.

15. The AFW to SG 1 Isolation Valve AF608 is normally open and required to be open for Safe Shutdown. The Control Circuit is normally isolated by a separate control switch in the Control Room. A review of the circuits shows, with the circuit isolated, spurious closure would require two hot shorts which is not considered credible. Therefore, no actions are required.

16. The AFWP 1 Flow Control Valve AF6452 is open and required to modulate for Safe Shutdown. A review of the circuit in this fire area shows that the potential exists for loss of control to this valve. Therefore, fail open this valve by depowering the valve at D1P (Breaker D1P3) and use ICS038B via manual control at the ASP to control SG 1 level. A review of the circuit for AFPT 1 Steam Admin Valve ICS038B shows that manual control of ICS038B can be regained at the ASP by transferring control at the ASP.

17. The AFPT Main Steam Inlet Valve MS106 is normally closed and is required to be open for Safe Shutdown. A review of the circuit in the fire area shows that a fire in this area could prevent the opening of or spuriously close MS106. Therefore, trip Breaker D135 at D1NA and open MS106.

18. The AFPT 1-2 Main Steam Cross-Connect Valve MS107A is normally open to provide a steam supply to AFPT 1-2. For a fire in this area, no credit is taken for AFPT 1-2 and the steam output from SG 1-1 is such that it's capacity is sufficient to run the AFW Pump Turbine 1-1 even with flow through MS107A. During cooldown at lower temperatures, the flow diversion could effect AFPT Pump 1 capacity. With the throttle valve for AFPT 1-2 tripped, steam flow past MS107A will be insignificant. Therefore, no action is required.

FIRE AREA DD TABLE 1 NOTES

The AFPT 1-1 Main Steam Cross-Connect Valve MS106A is normally open to provide a steam supply to AFPT 1-1 for a fire in this area. No credit is taken for SG 2, since any steam from SG 2 to AFPT 1-1 will not affect the operation of AFPT 1-1 and AFPT 1-2 is tripped to prevent overfilling SG 2. Therefore, no action is required.

19. The AFWP Turbine 1 Steam Admission Valve MS5889A is an air-operated valve which is normally closed and required to be open for Safe Shutdown. Review of the circuit indicates a hot short can prevent the valve from opening. Fail open the valve by isolating and venting the air off the valve.

20. Containment Air Cooler Fan C1-1 is required for Safe Shutdown. A review of the circuit indicates that the potential exists for loss of control as well as spurious stopping of Fan C1-1, for a fire in this area. The control circuits can be isolated by manually placing the disconnect switch in Cabinet CDE12A-1 in the LOCAL position. CAC Fan C1-1 can be manually started in slow speed by placing the control switch on the BE1401 door in the SLOW position.

21. A review of the circuits shows that spurious operation (either open or closed) and loss of control is possible. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control
For restoring Letdown, trip Breaker BF1227 at F12A and open CC1409.

22. The CCW Inlet Isolation Valves CC1411A, B and Outlet Isolation Valves CC1407A, B are normally open and required to be open for Safe Shutdown to restore Letdown. A review of the circuits shows that spurious closure is possible. For restoring Letdown, trip the respective breakers and open/verify open CC1407A, B, and CC1411A, B.

23. The CCW Return Header 1 Valve CC2645 is normally open and required to be open to provide cooling to the Seal Return Coolers. A review of the circuits shows that spurious closure is possible. Open Breaker BE1161 at E11D and open/verify open CC2645.

24. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown (See Note 26).

25. Not Used

26. The CCW to Nonessential Isolation Valve CC1495 is normally opened and required to be open for Seal Return. A review of the circuits indicates that a hot short may cause this valve to remain open. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened when the DHR coolers are not in service. (NOTE: Verify CC1467(CC1469) is closed before opening CC43 and that CC42 (manual isolation valve) and CC43 are closed before opening CC1467(CC1469).

27. The CCW Line 1 Inlet and Return Isolation Valves CC5095 and CC5097 are normally open and required to be open to provide cooling for Letdown Coolers. A review of the

FIRE AREA DD TABLE 1 NOTES

circuits indicates that spurious closure is possible. Trip breakers BE1226 and BE1227 at E12A and manually open CC5095 and CC5097.

28. CCW Pump P43-1 is aligned to CCW Train 1 and is required to be operable for Safe Shutdown. Based on a review of the circuits, control of the pump can be regained locally after operation of disconnect switch at C1 Bus.

29. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A, CF01B before going below 700 psig.

30. The Control Room Emergency Ventilation System (CREVS) is required to be operable to maintain Control Room habitability. If CREVS is lost, the operators can evacuate the Control Room for a fire in this area and shut down the plant from outside the Control Room.

31. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication. (See Note 12).

Due to loss of power to Train 1, (Ch 1/3), Train 2 (Ch 2/4), and loss of SFAS prefab cables, SFAS could actuate. This actuation could operate the following components:

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530,1531	CS Iso Vlv	Open	Stop P56-1, 2
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Close then Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B

FIRE AREA DD TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

32. The LPI Line 1 Valve DH01B is normally open and is required to be open for Cold Shutdown. The control circuit is normally isolated by an isolation switch in the Control Room and a review of the circuits show with the circuit isolated, spurious closure is not possible. However, control and indication can be maintained by operating Disconnect Switch CDE-11A which will provide control and indication at local controller.

33. NOT USED

34. To prevent spurious operation of Valves DH09A, DH7A, and DH7B are deenergized.

35. The DH Normal Suction Valves DH11 and DH12 are normally closed and depowered during plant operation. A review of the circuits indicates loss of control power is possible. Since the DHR System is only required operable for Cold Shutdown, manually open Inlet Isolation Valves (DH11 & 12) or Bypass Valves DH21 & DH23.

36. The Decay Heat Removal (DHR) Suction 1 Valve DH1517 is closed during normal operation but required open for DHR Cold Shutdown. A review of the circuits indicates the Disconnect Switch at CDE-11D will regain local control at NVDH1517. Transfer Disconnect Switch to local. (NOTE: DH2733 should be verified closed prior to opening DH1517).

37. The Decay Heat Pump 1 BWST Suction Valve DH2733 is normally open but required to be closed prior to going into DHR cooldown. A review of the circuits indicates control of the valve may be lost. Therefore, trip Breaker BE1121 at MCC E11A and close DH2733. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator, and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

38. DH Auxiliary Spray Stop Valve (DH2735) and Throttle Valve (DH2736) are normally closed and one of them is to be closed when starting DHR Cooldown, to prevent Pressurizer Quenching. A review of the circuits indicates that 2 hot shorts (1 per valve) are required for both valves to spuriously open. This is not a credible event. (NOTE: If Aux Spray is required, local control can be regained by transferring the Disconnect Switches (CDE-11B-1 for DH2735 and CDF-11A-2 for DH2736) to local and using Local Switches NVDH2735 and NVDH2736).

39. The LPI/HPI Crosstie Valve DH64 is normally closed and is required closed for DHR Cooldown. A review of the circuit indicates spurious opening is possible. Transfer

FIRE AREA DD TABLE 1 NOTES

control on CDE-11E to local and verify DH64 is closed prior to use of DHR. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

40. DHR Pump 1 P42-1 is required to be operable for cooldown to Cold Shutdown. A review of the circuit indicated the pump could spuriously start or be made inoperable. However, local control can be regained by transferring the Disconnect Switches to local at C1 and using the local controller to start the pump.

41. Letdown Cooler Inlet Valve MU02B is normally open and needed open to restore Letdown. A review of the circuits indicates that control power is lost in this fire area but can be regained locally by transferring the disconnect switch to local. Transfer Disconnect Switch on CDE-11B-1 to local and control MU02B at MCC E11B.

42. The EDG 1 Air Start Solenoid Valves DA1147A/B are normally closed and are required to open to provide starting air to the air motors. A review of the circuits indicates the circuits can be disconnected from the Cable Spread Area and Control Room. Disconnect and repower the circuits using the disconnect switch at C3621 and start diesel locally.

43. Emergency Diesel Generator 1 is normally stopped and is required to run due to Loss of Offsite Power. Disconnects and redundant fuses are installed to allow isolation at CSR or CTRL Room. Disconnect and repower the circuits using the disconnect at C3621. Operate the Diesel locally.

44. Essential Power supplies C1 and E1 are required to be operable for Safe Shutdown. A review of the circuits indicates that not all of the circuits can be isolated from the Cable Spread Room or Control Room. The Ammeter circuit for E1 is from a current transformer. A short or open on this circuit will not affect E1 (loss of indication only). Disconnect Control Room circuits by locally operating disconnect switch at C1 and E1.

45. Neutron Flux Monitoring Cabinet (Ch 1)(C4808) is required to provide Source Range Indication for a fire in the Control/Cable Spread Room.

    Monitor source range indication at C4808 (Room 402).

46. Control Cabinets C5759C, CC5763A, C5799, and C5760D provide power to NNI Instrumentation. However, redundant NNI Instrumentation is available at the Auxiliary Shutdown Panel (C3630).

47. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS:

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow

FIRE AREA DD TABLE 1 NOTES

Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW Flow to the accredited steam generator may be required.

48. Reactor Protection System Panel and Source Range Monitoring NI-NI2 and NI-5874A are required to be operable to monitor source range flux. A failure of the circuits would disable monitoring capability in the Control Room. Monitor Source Range at C4808 (NI-5874C)(See Note 45).

49. The Low Voltage Switchgear Room 429 HVAC Damper HV5305A & B are normally closed and required to be open for Safe Shutdown. A review of the circuits indicates loss of power to the dampers is possible. Analysis shows that only 1 damper has to be opened manually after 1-hour. Open HV5305B.

50. Atmospheric Vent Valve ICS11B is normally closed and is required to be throttled for Safe Shutdown. A circuit failure or loss of air can disable the remote operation of this valve. SFRCS actuation will ensure the valve remains closed until local manual action is taken. The Main Steam Safety Line Valves will provide a steam release path until local manual control for ICS11B is achieved. Manually operate ICS11B in Room 500.

51. The Main Steam Isolation Valves (MSIV) MS100 and MS101 are normally open and required to be closed for Safe Shutdown. Each MSIV has 5 separate solenoids which need to be open for the MSIV to remain open. A review of the circuits for the solenoid shows that a credible number of hot shorts to [reopen or] keep the MSIV's open is not possible. Closing the MSIV's in the Control Room before leaving and de-energizing YE2 and YF2 by opening Breakers BE1180 on E11B and BF1101 on F11A, or its upstream supply, (de-energizing Ch 3/4 of SFRCS) (See Note 47) to de-energize the solenoid valves will close MS100 and MS101.

52. In order to reduce water to the Clean Waste Receiver Tanks, align Makeup Pump P37-1 Recirc to the BWST. Manually open HP29, and HP1556 and then open MU208 and close MU206.

53. Seal Injection, Seal Return and Letdown (including lineup to Clean Waste Receiver Tanks) are required for Safe Shutdown for a fire in this area. A review of the circuits for the following valves indicate manual operation is required:

FIRE AREA DD TABLE 1 NOTES

COMPONENT	DESCRIPTION	ACTION
MU10A	Mxd Bed 1-1 LtDn In Vlv	Trip Bkr BE2262 at E22B & Open MU10A
MU11	Letdown to Radwaste 3-Way-Vlv	Trip Bkr BE2278 at E22B & Align MU11 to the CWRT
MU19	Seal Inj Inlet Iso Vlv	Close MU214 and Throttle MU216
MU97	Seal Rtn to Cln Wst Tk Iso Vlv	Open
MU182	Seal Rtn to Mkup Tk Iso Vlv	Close
MU6405	RC MU Pump 1-1 Suction Vlv	Verify Open
MU6407	Makeup Recirc Iso Vlv	Verify Open
MU6408	Makeup Cross-Connect Iso Vlv	Verify Open
MU6409	Makeup Cross-Connect Iso Vlv	Verify Open
MU6420	MU32 Bypass Valve	Verify Open
MU6421	Makeup CTMT Iso Valve	Verify Close
MU6422	Makeup CTMT Iso Vlv	Verify Open
WC119	Cln Wst Tk In Iso Vlv	Open
WC120	Cln Wst Tk In Iso Vlv	Open
WC1453	Cln Wste Pri Demin Inlet Vlv	Close
WC1743	Cln Wste Recvr Tk Iso Vlv	Open
WC1747	Cln Wste Recvr Tk Iso Vlv	Open
WC3560	Degasifier Bypass Valve	Open

54. The Makeup Pump 1 (P37-1) and its Lube Oil Pumps P-371B & D are required to be available for Safe Shutdown for a fire in this area. A review of the circuits indicates that control of the pumps can be regained locally after transferring the disconnects. Operate the pumps locally. (NOTE: Since Lube Oil Pump P-371B is available, Lube Oil Pump P-371C is not required.)

55. Makeup Flow Indicators FI-6435 are used to monitor makeup flow. A review of the circuits indicates that FI-6425 and FI-6435 may not work. Monitor Pressurizer Level via LI-RC14-1 at the ASP as an indirect means of measuring makeup flow.

56. Pressurizer Level, Pressurizer Pressure, SG1-1 Startup Level, SG 1-1 Pressure Indication, RCS Loop 1 Pressure, and SG 2 Startup Level and SG 2 Pressure Indication will be monitored at the Auxiliary Shutdown Panel (ASP). The SG 1 Level and Pressure indicators on the ASP are used to read the SG 2 Level and Pressure by transferring the two-position selector switch on the ASP from SG 1 to SG 2. The cable/connector for the SG 2 pressure signal is manually connected to the selector switch only during unit shutdown (for testing) or during a fire event to ensure that channel separation is maintained. This type of repair is similar to the repair for Hot and Cold Leg Temperature instrumentation documented in the NRC SER (Ref. 2.5.R).

57. RCS Loop 1 Hot and Cold Leg Temperatures and RCS Loop 2 Hot and Cold Leg Temperatures will be monitored locally using a portable instrument. Acceptability of this repair is documented in the NRC SER (Ref. 2.5.R).

FIRE AREA DD TABLE 1 NOTES

58. The Pilot-Operated Relief Valve (PORV) RC2A is normally closed and is required to remain closed to preclude RCS Blowdown to the Pressurizer Quench Tank. Review of the circuits shows that a fire-induced failure of cables for the PORV could result in the inadvertent spurious opening of the valve.

    The PORV Block Valve RC11 is normally open and is required closed for Shutdown purposes in the event the PORV spuriously opens. Therefore, in the event of a fire in the Cable Spreading Room or Control Room, Valve RC11 should be closed by means of the Control Switch HIS-RC11 (C5705) prior to evacuating the Control Room. Afterwards, the circuits need to be isolated from the influence of a fire by operating a Disconnect Switch at CDE-16B, thus ensuring control and indication at MCC E16B.

59. Valves RC200, RC239A, RC239B, and RC4632 may be affected by a fire in this area. Manual Valve RC147 (located in Containment, outside the D-Ring) will be closed to provide a High/Low Pressure Interface. This manual action need not be taken for 8-hours because the Quench Tank has sufficient capacity to hold the discharge from this line for at least 8-hours. Even if this flow path were opened, no unrecoverable condition would result because the restricting orifice is sized such that one Makeup Pump could easily handle the flow.

60. RCS Loop 1 and Loop 2 High Point Vent Valves (RC4608A, B and RC4610A, B respectively) are normally closed and are required to remain closed in order to prevent uncontrolled blowdown via the High Point Vents. Each pair of valves per loop are in series and both would be required to open for blowdown to the containment atmosphere to occur.

    Fire damage to the D cable for Valves RC4608A and RC4610A cannot spuriously open the respective valve due to the open control switch in the Control Room. Hence, fire damage to these cables is inconsequential with regards to breach of a High/Low Pressure Interface.

    In order for spurious actuation of Valves RC4608A, B or RC4610A, B to occur, 2 concurrent hot shorts of the proper polarity without grounding to the C cable would be required. Since these valves are aligned in series, an inadvertent breach of a High/Low Pressure Interface could only occur in the event of 4 specific concurrent hot shorts of the proper polarity. Such an occurrence is not credible. Loss of control power to C5799 will cause loss of power to RC4608A, B which cannot cause spurious opening of the valves.

    Hence, fire damage of the cables for RC4608A, B and RC4610A, B is concluded not to be a concern from the point of view of breaching a High/Low Pressure Interface.

61. Either SWS Pump P3-1 or P3-3, whichever is aligned to Train 1 SWS at the time of the fire, is required for Safe Shutdown. A review of the circuits shows that control can be regained locally by Disconnecting the Control Room circuits (DSA and DSB Switch at C1) and controlling the pump locally. (NOTE: For P3-3, also transfer disconnect at CD and reclose Breaker ACD4. The trip function of this breaker may be disabled.

62. Containment Air Cooler (CAC) 1 SW Inlet and Outlet Valves (SW1366 and SW1356) are required to be open to provide containment cooling. A review of the circuits indicates

FIRE AREA DD TABLE 1 NOTES

spurious operation and loss of control power is possible for a fire in this area. Therefore, open Breaker BE1142 at E11C and open/verify open SW1366. Open SW1356 by isolating and bleeding off the air to the valve.

63. AFP1 Suction Valve SW1382 is normally closed and is required to be closed until the Condensate Storage Tanks are low and then opened to supply water to the S/G's. Transfer control to the ASP. Due to the torque/limit switches possibly being bypassed by a hot short, the valve may be damaged such that the valve can not be opened. If this occurs, procedures instruct plant personnel to provide an additional source of water from the Fire Water System. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

64. SW Nonessential Isolation Valve SW1399 may be opened under normal operation and this flowpath is required to be closed for Safe Shutdown to avoid SWP3-1 or P3-3 flow diversion. A review of the circuits indicates a fire in this area can disable control power and possibly damage SW1399 (Ref. 2.7.F). Close TPCW valves SW54, 55 and 56.

65. SW Discharge Valves to the Intake Structure (SW2929) and Forebay (SW2931) are 2 of 4 SW Discharge Valves SW2929 through SW2932), 1 of which is normally open and depowered (controlled administratively) to ensure SWS Discharge at all times.

    The sole concern is that at least 1 of these valves remains open, thereby assuring a service water flow outlet. Since 1 of the valves is normally open and depowered, there is no concern associated with the possibility of spurious closure of SW2929 or SW2931 precluding SWS Discharge capability.

66. Essential CCW is provided to the Makeup Pumps, bypassing CC1460.

67. YE2 associated circuits are not coordinated. This results in loss of YE2. Loss of this panel will cause a Reactor Trip via ARTS which is acceptable.

68. The Letdown Block Orifice Isolation Valve MU04 is normally open and is required to be open to restore Letdown. A review of the circuit indicates spurious closure of this valve is possible. Therefore, trip Breaker BE2259 at E22B and verify open/open MU04.

69. NOT USED

70. SW Flow CCHX 1 Iso Valve SW1424 is normally open and required to be open for Safe Shutdown. Spurious closure of the valve is not possible due to control scheme design (see MOD 87-1315).

71. Letdown Cooler Inlet Iso Valves MU01A, B are normally open and required to be open after restoring Seal Injection (Note MU02B will be used to maintain High/Low Interface). A review of the circuits indicates spurious closure of the valves is possible. For restoring Letdown, trip Breaker BF1237 at F12A and open MU01A. (Note: Verify that MU01B is closed if CC1410 is closed).

72. Normally closed manual Valve SW325 maintains isolation for CAC 3.

73. Spurious opening of MU6420, MU32 Bypass Valve, could result in Makeup Pump 1

FIRE AREA DD TABLE 1 NOTES

runout. Direct diagnostic indication of Makeup Pump 1 runout is via pump discharge pressure indicator MU25A, locally at the pump. Maintaining a minimum pressure of 2260 psig assures a pump flow of less than 250 gpm and no pump runout condition (Ref. 2.6.O).

74. Spurious operation of the Motor Driven Feed Pump (MDFP) P241 is possible due to hot shorts on control cables in this fire area. Manual Operator Action to close locked valve FW6398 shall be taken to preclude overfill of the credited Steam Generator.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: DF

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.DF.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
427	NO.2 ELEC PENETRATION RM	49,447	Y	AUTO

…….

4.6.DF.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA DF

The following components are located in fire area DF.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	2	C4602	PNL	NEUTRON FLUX MON. CABINET (CH.2)
	2	CDF-11A-1	PNL	CONTROL DISCONNECT TRANSFER SWITCH
	2	F11A	MCC	480VAC MCC
	2	YF2	PNL	240/120VAC MCC

…….

4.6.DF.3 Fire Propagation Control

Fire Area DF is located in the Auxiliary Building consisting of Room 427 (elev 603) as shown on Drawing A-224F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete (except as noted below).

There are four Emergency Ventilation System ducts and one Containment Purge duct which pass through this fire area. The ductwork does not have a fire damper installed in the floor (to Fire Area A) or ceiling (to Fire Area EE). The duct-work does not have any opening in Room 427. Based on the combustible loadings, automatic wet-pipe sprinkler system and construction of the ductwork, a fire will not propagate from one fire area to another.

There are non-rated openings in the wall separating fire area DF and X. These non-rated openings have been evaluated and will not allow the propagation of a fire.

Room 427 has structural steel which does not have a 3-hour fire rating. Based on analysis of the combustible loadings and automatic wet-pipe sprinklers in the room, the steel will not fail.

4.6.DF.4 Fire Detection and Suppression

Fire Area DF consists of Room 427 which has a fire detection system, Fire Detection Zone FDZ 427 and an automatic wet-pipe sprinkler system.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-224F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.DF.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area DF. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	1CD107G			EMBEDDED CONDUIT	1*
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	2CBF1201F 2CBF1201G			OP-02501 (TRIP P14-2) OP-02501 (TRIP P14-2)	27 27
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1CD135G 1PD135A		OP-02501 (OPEN MS106) OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106) OP-02501 (OPEN MS106)	14 14
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-2)	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188K 2CBF1188L CDF-11A-2	PSL4931B		OP-02501(TRIP P14-2) OP-02501(TRIP P14-2) OP-02501(TRIP P14-2)	14 14 14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2)	OP-02501 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	1CBE1401G 1CBE1401J 1CBE1401K 1PBE1401A 1PBE1401B			EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1* 1* 1* 1*
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	1CBE1501F 1CBE1501G 1CBE1501H 3PBEF15A 3PBEF15B P3P4CX			EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	1* 1* 1* 7 7 7
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2CBF1227C 2CBF1227F 2PBF1227A P2C5GX P2P5FX	MU01A MU01A MU01A MU01A	OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409) OP-02501 (OPEN CC1409)	16 16 16 16 16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	2CBF1228C 2CBF1228F 2PBF1228A P2C5GX	MU01B MU01B MU01B MU01A		NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7 7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	P2P5FX			NOT REQUIRED FOR S/D	7
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H			OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CBE1226F 1PBE1226A		OP-02501 (OPEN CC5095) OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095) OP-02501 (OPEN CC5095)	16 16
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	1CBE1227E 1PBE1227A		OP-02501 (OPEN CC5097) OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097) OP-02501 (OPEN CC5097)	16 16
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	2CBF1120C 2CBF1120E 2CBF1120F 2CBF1120G 2CVCF01AA 2CVCF01AB 2CVCF01AC 2PBF1120A BF1120 CDF-11A-1 P2C5GX P2P5FX	 PSH7529A MU01A 	OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A) OP-02501 (CLOSE CF01A)	22 22 22 22 22 22 22 22 22 22 22 22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209C			EMBEDDED CONDUIT	1*
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216E			EMBEDDED CONDUIT	1*
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CSS	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111B		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111C		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
											1CBE111E		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	2CBF111B		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2CBF111C		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2CBF111E		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
											2CBF111F		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	2CBF1130C		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130E	PSH7531A/K03	OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130F		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130G		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130J		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130K		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2CBF1130L		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											2PBF1130A		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											BF1130		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											CDF-11A-1		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											P2C5GX	MU01A	OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
											P2P5FX		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	2CBF1125B			DH2735 IS AVAILABLE	31
											2CBF1125E			DH2735 IS AVAILABLE	31
											2CBF1125F			DH2735 IS AVAILABLE	31
											2PBF1125A			DH2735 IS AVAILABLE	31
											BF1125			DH2735 IS AVAILABLE	31
											CDF-11A-2			DH2735 IS AVAILABLE	31
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	7
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	2CY211A 2CY419A			INDICATION ONLY INDICATION ONLY	5A 5A
	C5708	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			EMBEDDED CONDUIT	1*
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			EMBEDDED CONDUIT	1*
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	1CY116A 2CY212A			EMBEDDED CONDUIT SFAS ACTUATES	1* 13
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	2CD2P19A			SFAS ACTUATES	13
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATES	13
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	2CD2P18A 4CY407A			SFAS ACTUATES SFAS ACTUATES	13 13
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	BPYBU51A			USE OTHER INDICATION	32

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	1CY115B			EMBEDDED CONDUIT	1*
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	1CY121A 1CY121B 1PD1P11A			EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1* 1*
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	1CD1P18A			EMBEDDED CONDUIT	1*
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			EMBEDDED CONDUIT	1*
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY106A			EMBEDDED CONDUIT	1*
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY1A105A			ALTERNATE MONITORING	28
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CD1P19A 3CY307A			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	2CY215B 2CYF211A			LOSS SFRCS CH 2/4 ACTUATES AFW LOSS SFRCS CH 2/4 ACTUATES AFW	14 14
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY107AA 1CY109AA			ALTERNATE MONITORING ALTERNATE MONITORING	28 28
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	1CBCE11B 1CBCE12B			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	1PBE1234A			EMBEDDED CONDUIT	1*
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	BCYBU41A			OP-02501 (OPEN WC1747)	5D,12
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	1CD1P21A			EMBEDDED CONDUIT	1*
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	1CD1P21A			EMBEDDED CONDUIT	1*
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	1CD1P21A			EMBEDDED CONDUIT	1*
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	1CD106B 1CD106D 1PD106A			NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D NOT REQUIRED FOR S/D	7 7 7
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	1CBE1240E			EMBEDDED CONDUIT	1*
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	1CBE1241E			EMBEDDED CONDUIT	1*
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	LOSS OF AIR	12

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	2CFV100B			SO NOT POSSIBLE	5C
											2CFV100BG			SO NOT POSSIBLE	5C
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	2CV1001C			SO NOT POSSIBLE	5C
											2CV1001F			SO NOT POSSIBLE	5C
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1237C	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											2CBF1237F	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											2CBF1237K	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											2PBF1237A	CC1409	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											P2C5GX	MU01A	OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
											P2P5FX		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1238C	CC1410		NOT REQUIRED FOR S/D	7
											2CBF1238F	CC1410		NOT REQUIRED FOR S/D	7
											2CBF1238K	CC1410		NOT REQUIRED FOR S/D	7
											2PBF1238A	CC1410		NOT REQUIRED FOR S/D	7
											P2C5GX	MU01A		NOT REQUIRED FOR S/D	7
											P2P5FX			NOT REQUIRED FOR S/D	7
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	SFAS INITIATED	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS INITIATED	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS INITIATED	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS INITIATED	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS INITIATED	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	2CBF1616A 2CBF1616C 2PBF1616F			OP-02501(MONITOR FOR PMP RUNOUT) OP-02501(MONITOR FOR PMP RUNOUT) OP-02501(MONITOR FOR PMP RUNOUT)	34 34 34
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	ACD117H ACD117I ACD117J APD117A			USE P-371B USE P-371B USE P-371B USE P-371B	30 30 30 30
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			USE PI-RC2B4	28
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			USE PI-SP12B	32
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			USE TI-RC3B2	28
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	2LTRC3B6B			USE TI-RC3B2	28
											P2L4GX			USE TI-RC3B2	28
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			USE TI-RC3B4	32
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285K			NORMALLY OPEN CONTACT	29
											2PBF1285J			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2C5GX	MU01A		MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2P5FX			MULTIPLE HOT SHORTS NOT CREDIBLE	29
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126C			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1126E			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1126F			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1126H			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1126J			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1126K			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2PBF1126A			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											BF1126			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											CDF-11A-1			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2C5GX	MU01A		MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2P5FX			MULTIPLE HOT SHORTS NOT CREDIBLE	29
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127C			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1127E			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1127F			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CBF1127G			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2PBF1127A			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											BF1127			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											CDF-11A-1			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2C5GX	MU01A		MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2P5FX			MULTIPLE HOT SHORTS NOT CREDIBLE	29
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2J			NOT REQUIRED FOR S/D	7
											2CVRC2L			NOT REQUIRED FOR S/D	7
											2CVRC2M			NOT REQUIRED FOR S/D	7
											2CVRC2Q			NOT REQUIRED FOR S/D	7
											BCVRC2P			NOT REQUIRED FOR S/D	7
											P2C5GX	MU01A		NOT REQUIRED FOR S/D	7
											P2P5FX			NOT REQUIRED FOR S/D	7
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	2CV4610AC			OPEN CONTACT	11
											2CV4610AD			OPEN CONTACT	11
											P2P5FX			OPEN CONTACT	11
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	2CV4610BC			OPEN CONTACT	11
											P2C5CX			OPEN CONTACT	11
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632B			MULTIPLE HOT SHORTS NOT CREDIBLE	29

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632C			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CV4632E			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CV4632F			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											2CV4632G			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											JY4632			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											P2C5CX			MULTIPLE HOT SHORTS NOT CREDIBLE	29
											RC4607			MULTIPLE HOT SHORTS NOT CREDIBLE	29
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATES	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATES	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	3CY307A			SFAS ACTUATES	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	4CY407A			SFAS ACTUATES	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	2CLY6454A			SFAS ACTUATES	13
											2CLY6454B			SFAS ACTUATES	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	4LSFPT42A			SFAS ACTUATES	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21A P2L4GX			SFRCS ACTUATES SFRCS ACTUATES	14 14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41A P2L4GX			SFRCS ACTUATES SFRCS ACTUATES	14 14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21B P2L4GX			SFRCS ACTUATES SFRCS ACTUATES	14 14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41B P2L4GX			SFRCS ACTUATES SFRCS ACTUATES	14 14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS DUE TO LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS DUE TO LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS DUE TO LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS DUE TO LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	1CV1356E			EMBEDDED CONDUIT	1*
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	1CV1358AG 1CV1358AH 1CV1358AJ			EMBEDDED CONDUIT EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1* 1*
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	1CBE1142G			EMBEDDED CONDUIT	1*
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	1CBE1207E 1CBE1207F 2CBF1224B 2CBF1224E 2CBF1224F			SW325 REMAINS CLOSED SW325 REMAINS CLOSED SW325 REMAINS CLOSED SW325 REMAINS CLOSED SW325 REMAINS CLOSED	33 33 33 33 33
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232F			EMBEDDED CONDUIT	1*
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			N/A	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	C5760A	CTRM CABINET									3CY313A			LOST DUE TO BREAKER COORDINATION	23
ASSCKT	C5763F	RPS-3 CABINET									3CY308A			LOST DUE TO BREAKER COORDINATION	23
ASSCKT	CFP05Q	BWST HEAT TRACING									3CY310A			LOST DUE TO BREAKER COORDINATION	23
ASSCKT	C5784C	ARTS CABINET									3CY312A			LOST DUE TO BREAKER COORDINATION	23

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA DF TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA DF TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. Valves RC4610A & B are in series and 4 shorts would be required to repower both valves. See E-52B sht 71A & B. Such an occurrence is not credible. The one inch lines include a restricting orifice sized to limit the flow to within the Makeup System capacity.

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to lose of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38

FIRE AREA DF TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    Trip Breaker BE1146 at E11B before closing AF3871 and trip Breaker D135 at D1NA before manually opening MS106.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

FIRE AREA DF TABLE 1 NOTES

RCP Seal Return, Seal Injection and Letdown Flow

The following manual valves will need to be operated:

CC5095	Trip Bkr BE1226 at E12A & open CC5095	MU182	Close
		MU214	Close
CC5097	Trip Bkr BE1227 at E12A & open CC5097	MU216	Throttle
		WC119	Open
MU97	Open	WC120	Open

The following valves may also need to be operated manually:

CC1409	Open	MU02B	Open
MU01A	Trip Bkr BF1237 at F12A & open MUO1A	MU10A	Open
		MU11	Align to CWRT

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A, before going below 700 psig. In addition, if action were required to deenergize MCC F11A (located in the fire area), Breaker BF115 on MCC F1 could be tripped to deenergize the MCC. All equipment powered via MCC F11A is Train 2 equipment and therefore not required for this fire area.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, by-passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

FIRE AREA DF TABLE 1 NOTES

The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. AF3871 may spuriously open or close upon a hot short to its control circuits. AF3871 may not be able to be opened or closed upon an open circuit. This is of no consequence, however, unless AFWP 2 is in use. Since this is a Train 1 Shutdown area, AFWP 2 is not used for SSD. AF3871 may spuriously actuate due to a loss of power to SFRCS Actuation Channel 2. If this occurs, AFWP 2 will be tripped (See Note 14).

28. Loss of power to PAMS Panels C5763A & C5799 would result in loss of PI6365B, TI-RC3B5, and TI-RC3B6. PI-RC2B4 is available for RCS Pressure Indication and TI-RC3B2 is available for RCS Temperature Indication.

29. A review of EWD E-52B, Sheet 11, showed that a fire-induced failure of the circuits for the Pressurizer Vent Header Valve RC200 could not result in the spurious opening of the valve.

    A breach of the Pressurizer Vent Header High/Low Pressure Interface can only occur in the event of a 3-phase-to-phase uninterrupted hot short of the proper polarity of the Power Cable (2PBF1285J) for Valve RC200 (which is only possible at Containment Penetration P2P5FX) in conjunction with, at a minimum, one additional uninterrupted hot short to cables for either Valve RC239A, B or RC4632. The probability of such an occurrence (4 hot shorts) is extremely low.

30. Although P371C may be affected by a fire in this area, the MUP 1 Main Lube Oil Pump (P371B) remains available to provide lubrication for the Makeup Pump.

31. DH Aux Spray Valve DH2736 is normally closed and required to be closed when going into DHRS to prevent depressurization if DH2735 is also open. A review of the circuits indicates that DH2736 could spuriously open. Since DH2735 is not affected by a fire in this area, no action is required.

32. YBU is the normal power supply for C5759C and is not required for shutdown in this area as other indicators are available.

33. Normally closed manual Valve SW325 maintains isolation for CAC 3.

34. Spurious opening of MU6420, MU32 Bypass Valve, could result in Makeup Pump 1 runout. Direct diagnostic indication of Makeup Pump 1 runout is available in the Control Room via Makeup Flow Indicators, FI-6425 and FI-6435.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: DG

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.DG.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
402	NO. 1 ELEC PENETRATION RM	24,767	Y	AUTO

…….

4.6.DG.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA DG

The following components are located in fire area DG.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	1	C4808	PNL	NEUTRON FLUX MON. CABINET (CH. 1)
	1	E11E	MCC	480VAC MCC
	1	E16B	MCC	480VAC MCC
	1	RC4801	PNL	DC CONT PWR TO RC4801 (MU6405, MU6407)
NI	1	NI-5874C	IND	LOCAL SOURCE RANGE IND

…….

4.6.DG.3 Fire Propagation Control

Fire Area DG is located in the Auxiliary Building consisting of Room 402 (elevation 603) as shown on Drawing A-224F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete (except as noted below).

Room 402 has structural steel which does not have a 3-hour fire rating. Based on analysis of the combustible loadings and automatic wet-pipe sprinklers in the room, the steel will not fail.

4.6.DG.4 Fire Detection and Suppression

Fire Area DG consists of Room 402 which has a fire detection system (Fire Detection Zone FDZ 402) and an automatic wet-pipe sprinkler system.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-224F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.DG.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area DG. Safe Shutdown will be accomplished using the High Pressure Injection System (HPIS) along with the Pressurizer Sample/Vent Header for Reactor Coolant System Inventory Control, the Makeup and Purification System for a Letdown path and HPI Seal injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146B		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											1CBE1146E		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											1CBE1146F		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											1CBE1146G		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											1CBE1146H		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											1PBE1146A		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											BE1146		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
											CDE-11E		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			OP-02501 (TRIP P14-1)	14
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			N/A	
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	BYPASSING CC1460	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1PBE1162A		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			SFRCS ACTUATES	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			SFRCS ACTUATES	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS ACTUATES	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XYA										NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS INITIATED	13
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE		OP-02501 (OVERRIDE SFAS)	SFAS INITIATED	13
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE			SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			N/A	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE		OP-02501 (OPEN HP27)	OP-02501 (OPEN HP27)	16
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE			N/A	
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BCNNI261C BCNNI264A BCY36218A BLNNI264B			OP-02501 (OPERATE MU214 & MU216) OP-02501 (OPERATE MU214 & MU216) OP-02501 (OPERATE MU214 & MU216) OP-02501 (OPERATE MU214 & MU216)	16 16 16 16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE			N/A	
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1167C	RX-2,RX-11-2		NOT REQUIRED FOR S/D	7
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	BCD217D			NOT REQUIRED FOR S/D	7
											BCD217F	PS2MU105A		NOT REQUIRED FOR S/D	7
											BCD217G	AD105		NOT REQUIRED FOR S/D	7
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCBF1168D			NOT REQUIRED FOR S/D	7
											BCBF1168E	BF1167		NOT REQUIRED FOR S/D	7
											BCBF1168F	PSMU102A		NOT REQUIRED FOR S/D	7
											BCBF1168G	D217		NOT REQUIRED FOR S/D	7
											BCBF1168I	AD105		NOT REQUIRED FOR S/D	7
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	BCAD105G			NOT REQUIRED FOR S/D	7
											BCAD105H			NOT REQUIRED FOR S/D	7
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			NOT REQUIRED FOR S/D	7
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602C 1CBE1602E 1CBE1602K 1PBE1602A BE1602 CDE-16B			OPEN RC200/RC239A OPEN RC200/RC239A OPEN RC200/RC239A OPEN RC200/RC239A OPEN RC200/RC239A OPEN RC200/RC239A	28 28 28 28 28 28
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BC P1C5SX			RC4608A IS H/L INTERFACE RC4608A IS H/L INTERFACE	29 29
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			ANALOG SIGNAL	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DG
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA DG TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates that High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA DG TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
HP02A, B	HPI 2 Disch Iso Vlv	Open	Operate from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P42-2	LPI Pump 2	On	Stop P42-2 from CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P56-2	CS Pump 2	On	Stop P56-2 from CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
P58-2	HPI Pump 2	On	Req'd for RCS Inventory Control
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA DG TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

HP27	Open	MU214	Close
MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU208	Open	WC120	Open

FIRE AREA DG TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct flow to CWRT
MU02B	Open		

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergizied.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW is provided CCW to the Makeup Pump Cooler, by-passing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. AF3869 may spuriously open or close upon a hot short to its control circuits. AF3869 may not be able to be opened or closed upon an open circuit. This is of no consequence, however, unless AFWP 1 is in use. Since this is a Train 2 Shutdown area, AFWP 1 is not used for SSD. AF3869 may spuriously actuate due to a loss of power to SFRCS actuation Channel 1. If this occurs, AFWP 1 will be tripped (See Note 14).

28. Spurious closure and/or failure to close is possible for RC11. RC200 in conjunction with RC239A will be used for Depressurization to allow HPI. RC2A is available as the High/Low Pressure Interface.

FIRE AREA DG TABLE 1 NOTES

29. RC4608B is in series with normally closed Valve RC4608A. RC4608A is relied upon as the High/Low Pressure Interface since RC4608A has no circuits or power supply in this fire area.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: DH

TRAIN ACCREDITED FOR SHUTDOWN: 1/2

4.6.DH.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
600	PURGE INLET EQPT RM	400	N	MAN
601	NO.1 MAIN STEAM LINE AREA	2,697	N	MAN
601A	NO.1 MAIN STEAM LINE AREA	400	N	MAN
602	NO.2 MAIN STEAM LINE AREA	3,559	N	MAN
705	PENTHOUSE	400	N	MAN
706	PENTHOUSE	400	N	MAN

……

4.6.DH.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA DH

The following components are located in fire area DH.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
MSS	2	ICS11A	SOV	MSL 2 ATM VENT VLV
	1	ICS11B	SOV	MSL 1 ATM VENT VLV
	2	MS100	SOV	MSL 2 ISO VLV
	2	MS100-1	SOV	MSIV 2 WU ISO VLV
	1	MS101	SOV	MSL 1 ISO VLV
	1	MS101-1	SOV	MSIV 1 WU ISO VLV
	2	MS375	SOV	MSL 2 WU DRAIN ISOLATION VALVES
	1	MS394	SOV	MSL 1 WU DRAIN ISOLATION VALVES
	2	PSV-SP17A1	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A2	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A3	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A4	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A5	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A6	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A7	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A8	SV	MSL 2 SAFETY VALVE
	2	PSV-SP17A9	SV	MSL 2 SAFETY VALVE
	1	PSV-SP17B1	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B2	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B3	SV	MSL 1 SAFETY VALVE

4.6.DH.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
MSS	1	PSV-SP17B4	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B5	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B6	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B7	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B8	SV	MSL 1 SAFETY VALVE
	1	PSV-SP17B9	SV	MSL 1 SAFETY VALVE

……

4.6.DH.3 Fire Propagation Control

Fire Area DH is located in the Auxiliary Building consisting of the Main Steam Area (elev 643') as shown on Drawings A-226F and A-227F.

A fire that originates in this fire area will be contained in this fire area. This fire area is enclosed by 3-hour rated concrete floors and walls (except external walls as noted below).

The Pressure Doors 601 and 602 are not UL listed (separate Fire Area DH from Fire Area HH) fire doors. Based on the low combustible loading and construction of the doors, a fire will not propagate from one fire area to the other.

The Floor Hatch (Door 607) between Room 600 (Fire Area DH) and Room 500 (Fire Area EE) is not a UL listed door. Based on the low combustible loadings and construction of this hatch, a fire will not propagate from one fire area to the other.

The Containment Exhaust Duct penetrates the floor of Room 600 (Fire Area DH) into Room 500 (Fire Area EE). Based on the low combustible loadings and construction of the ductwork, a fire will not propagate from one fire area to the other (See Reference for details).

The Train 1 Safe Shutdown equipment (Steam Generator Safeties and Atmospheric Vent Valve) is separated from the Train 2 Safe Shutdown equipment (Steam Generator Safeties and Atmospheric Vent Valve) by over 200 ft. horizontal distance with minimal intervening combustible. Therefore, a fire would not spread from one train of equipment to the other train.

4.6.DH.4 Fire Detection and Suppression

There is no automatic fire detection in this fire area.

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-226F and A-227F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.DH.5 Fire Area Safe Shutdown Summary

Trains 1 and 2 are accredited for Safe Shutdown in Fire Area DH due to presence of both Trains of Main Steam Safety Valves as well as circuits for both Trains of the Control Room Emergency Ventilation System and the Atmospheric Vent Valves are in this fire area. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

Manual actions may also be required to close the appropriate valve(s) or trip the appropriate Auxiliary Feedwater (AFW) Pump Turbine to terminate AFW Flow to the steam generator associated with the nonaccredited Train.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3869)	OP-02501 (CLOSE AF3869)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			OP-02501 (TRIP P14-1)	14
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			OP-02501 (TRIP P14-1)	14
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1PD135A		OP-02501 (OPEN MS106)	OP-02501 (OPEN MS106)	30
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			N/A	
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	2CBF1124B 2PBF1124A		OP-02501 (OPEN MS107) OP-02501 (OPEN MS107)	OP-02501 (OPEN MS107) OP-02501 (OPEN MS107)	30 30
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			N/A	
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-2)	OP-02501 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			NA	
	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			NA	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			NA	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	28
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	23
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	23
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,23
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,23
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209B 1PBE1209A			EMBEDDED CONDUIT EMBEDDED CONDUIT	1*,24 1*,24
	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	2CBF1149B 2PBF1149A			EMBEDDED CONDUIT EMBEDDED CONDUIT	1*,24 1*,24
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216B 1CBE1216E 1CCEAC1C			ADEQUATE SEPARATION EXISTS EMBEDDED CONDUIT EMBEDDED CONDUIT	24 1*,24 1*,24

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CREVS	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1PBE1216A			EMBEDDED CONDUIT	1*,24
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	2CBF1131B 2CBF1131E 2PBF1131A			ADEQUATE SEPERATION EXISTS ADEQUATE SEPERATION EXISTS ADEQUATE SEPERATION EXISTS	24 24 24
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	26
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1)	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS ACTUATES	13
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			SFAS ACTUATES	13
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			SFRCS ACTUATES	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			SFRCS ACTUATES	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS ACTUATES	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS ACTUATES	13

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			SFRCS ACTUATES	14
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			EMBEDDED CONDUIT	1*
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			NA	
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			NA	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			NA	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			NA	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			NA	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			NA	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			NA	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			NOT REQUIRED FOR S/D	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			NA	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			NA	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			NA	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			NA	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			NA	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			NA	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			NA	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			NA	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			NA	
	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			NA	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			NA	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			NA	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			NA	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			NA	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	NA	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			NA	
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NA	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			NA	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			NA	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			NA	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			NA	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			NA	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			NA	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			NA	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			NA	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			NA	
	RC3716										NONE			NA	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			NA	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			NA	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			NA	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			NA	
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			NA	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			NA	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			NA	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			NA	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			NA	
	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			NA	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			NA	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			NA	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			NA	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			NA	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			NA	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			NA	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			NA	
	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			NA	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			NA	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			NA	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			NA	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			NA	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			NA	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	OP-02501 (TRIP P58-1)	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	OP-02501 (TRIP P58-2)	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			NA	
	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			NA	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			NA	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			NA	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			NA	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			NA	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			NA	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			NA	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			NA	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			NA	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			NA	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			NA	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			NA	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			NA	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			NA	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NA	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			NA	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			NA	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			NA	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			NA	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			NA	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			NA	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			NA	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			NA	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			NA	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			NA	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			NA	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			NA	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			NA	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			NA	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	2CVCS11AA		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											2CVCS11AB		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											2CVCS11AC		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											2CVCS11AE		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											EV100A		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											NVICS11A		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
											SVICS11A1		OP-02501 (THROTTLE ICS11A)	OP-02501 (THROTTLE ICS11A)	10,12
	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	1CVCS11BA		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											1CVCS11BB		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											1CVCS11BC		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											1CVCS11BE		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											EV101B		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											NVICS11B		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
											SVICS11B1		OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B)	10,12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	1CFV100DB			SO NOT POSSIBLE	5C
											1CFV100DE	PSL100C		SO NOT POSSIBLE	5C
											1CFV100DF	PSL100D		SO NOT POSSIBLE	5C
											1CFV100DH			SO NOT POSSIBLE	5C

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	1CFV100EB			SO NOT POSSIBLE	5C
											1CFV100EE	PSL100E		SO NOT POSSIBLE	5C
											1CFV100EG			SO NOT POSSIBLE	5C
											2CFV100AB			SO NOT POSSIBLE	5C
											2CFV100AC	PSL100A		SO NOT POSSIBLE	5C
											2CFV100AE			SO NOT POSSIBLE	5C
											2CFV100B			SO NOT POSSIBLE	5C
											2CFV100BC			SO NOT POSSIBLE	5C
											2CFV100BD			SO NOT POSSIBLE	5C
											2CFV100BE	PSL100B		SO NOT POSSIBLE	5C
											2CFV100BG			SO NOT POSSIBLE	5C
											2CFV100C			SO NOT POSSIBLE	5C
											FPSL100A			SO NOT POSSIBLE	5C
											FPSL100B			SO NOT POSSIBLE	5C
											FPSL100C			SO NOT POSSIBLE	5C
											FPSL100D			SO NOT POSSIBLE	5C
											FPSL100E			SO NOT POSSIBLE	5C
											FV100			SO NOT POSSIBLE	5C
											JT6703			SO NOT POSSIBLE	5C
											JT6704			SO NOT POSSIBLE	5C
											JT6707			SO NOT POSSIBLE	5C
											JT6717			SO NOT POSSIBLE	5C
											NSV100			SO NOT POSSIBLE	5C
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	2CV1001A			SO NOT POSSIBLE	5C
											2CV1001B			SO NOT POSSIBLE	5C
											2CV1001C			SO NOT POSSIBLE	5C
											2CV1001D			SO NOT POSSIBLE	5C
											2CV1001F			SO NOT POSSIBLE	5C
											2CV1001G			SO NOT POSSIBLE	5C
											EV1001			SO NOT POSSIBLE	5C
											JT6704			SO NOT POSSIBLE	5C
											NV1001			SO NOT POSSIBLE	5C
											SV1001			SO NOT POSSIBLE	5C
											V1001			SO NOT POSSIBLE	5C
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	1CFV101AB			SO NOT POSSIBLE	5C
											1CFV101AC	PSL101A		SO NOT POSSIBLE	5C
											1CFV101AE			SO NOT POSSIBLE	5C
											1CFV101B			SO NOT POSSIBLE	5C
											1CFV101BC			SO NOT POSSIBLE	5C
											1CFV101BD			SO NOT POSSIBLE	5C
											1CFV101BE	PSL101B		SO NOT POSSIBLE	5C
											1CFV101BG			SO NOT POSSIBLE	5C
											1CFV101C			SO NOT POSSIBLE	5C
											2CFV101DB			SO NOT POSSIBLE	5C
											2CFV101DE	PSL101C		SO NOT POSSIBLE	5C
											2CFV101DF	PSL101D		SO NOT POSSIBLE	5C
											2CFV101DH			SO NOT POSSIBLE	5C
											2CFV101EB			SO NOT POSSIBLE	5C
											2CFV101EE	PSL101E		SO NOT POSSIBLE	5C
											2CFV101EG			SO NOT POSSIBLE	5C
											FPSL101A			SO NOT POSSIBLE	5C
											FPSL101B			SO NOT POSSIBLE	5C
											FPSL101C			SO NOT POSSIBLE	5C
											FPSL101D			SO NOT POSSIBLE	5C
											FPSL101E			SO NOT POSSIBLE	5C
											FV101			SO NOT POSSIBLE	5C
											JT6801			SO NOT POSSIBLE	5C
											JT6802			SO NOT POSSIBLE	5C
											JT6807			SO NOT POSSIBLE	5C
											JT6811			SO NOT POSSIBLE	5C
											NSV101			SO NOT POSSIBLE	5C

LEGEND

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SAFE SHUTDOWN ANALYSIS

FIRE AREA : DH

TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CV1011A			SO NOT POSSIBLE	5C
											1CV1011B			SO NOT POSSIBLE	5C
											1CV1011C			SO NOT POSSIBLE	5C
											1CV1011D			SO NOT POSSIBLE	5C
											1CV1011F			SO NOT POSSIBLE	5C
											1CV1011G			SO NOT POSSIBLE	5C
											EV1011			SO NOT POSSIBLE	5C
											JT6802			SO NOT POSSIBLE	5C
											NV1011			SO NOT POSSIBLE	5C
											SV1011			SO NOT POSSIBLE	5C
											V1011			SO NOT POSSIBLE	5C
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			ADEQUATE SEPARATION EXISTS	10
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			NA	
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			NA	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			NA	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203/206)	OP-02501(CLOSE MU203/206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS ACTUATES	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS ACTUATES	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS ACTUATES	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS ACTUATES	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			NA	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13

LEGEND

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SAFE SHUTDOWN ANALYSIS
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TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			NA	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			NA	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			NA	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			NA	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			NA	
	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NA	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			NA	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			NA	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NA	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			NA	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			NA	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			NA	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			NA	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			NA	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			NA	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			NA	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			NA	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			NA	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			NA	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			NA	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			NA	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			NA	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			NA	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			NA	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			NA	
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			NA	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			NA	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			NA	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			NA	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			NA	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			NA	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			NA	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			NA	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			NA	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			NA	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			NA	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			NA	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			NA	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			NA	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			NA	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : DH
TRAIN 1/2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232B 1PBE1232A			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	2CBF1132B 2PBF1132A			USE SW2927 EMBEDDED CONDUIT	24 1*,24
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			NA	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			NA	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			NA	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			NA	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MV4906	CTRM STANDBY COND 1 DMPR									1PBE1148A	E11E		ASSCKT - MOV	6*
ASSCKT	MV5262	CTRM EMER VNT FN 2 IN VLV									2PBF1186A	F11B		ASSCKT - MOV	6*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA DH TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC IEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA DH TABLE 1 NOTES

9. NOT USED

10. The separation of cables and equipment and associated nonsafety circuits of redundant trains are separated by a horizontal distance of more than 200 ft. with no intervening combustibles or fire hazards.

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A/B	Throttle*
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action.

* These valves are manually repositioned by personnel standing outside Fire Area DH by remote mechanical actions. Therefore, entry into the fire area is not required for manual operation.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components:

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1,-2
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
P58-2	HPI Pump 2	On	Stop P58-2 from the Cr after blocking SFAS
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B

FIRE AREA DH TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B)

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

    If AF3869 is manually closed, first trip Breaker BE1146 at E11E.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

FIRE AREA DH TABLE 1 NOTES

RCP Seal Return, Seal Injection and Letdown Flow

The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

Additionally, the following valves may need to be manually operated:

CC1410	Open	MU02B	Open
CC2645	Open	MU10A	Open
CC2649	Open	MU11	Align to CWRT
MU01B	Open		

RCS Inventory Control

Either Train of MUPS is available for RCS Inventory Control. After transferring Makeup Suction to the BWST, MU203 (Train 2) or MU206 (Train 1) will be manually closed after opening HP29, HP1556 and MU208 to route MUPS Recirc to the BWST rather than the Makeup Tank or Clean Waste System to conserve water.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A and CF01B before going below 700 psig.

23. The DHR Cooler Isolation Valves CC1467 and CC1469 are normally closed. These valves fail open on loss of air. However, these valves are required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS Cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467(CC1469).

24. There are no Train 1 CREVS cables in Room 602. For a fire in Room 602, Train 1 is used for Shutdown.

FIRE AREA DH TABLE 1 NOTES

Circuit 2CBF1132B could be affected by a fire in this area, disabling SW2928. CREVS Train 1 and SW2927 can be used if SW2928 is not available.

25. NOT USED

26. Decay Heat Suction Valves DH11 & 12 are normally closed and depowered at all times. Manual Bypass Valves DH21 & 23 are opened for Cold Shutdown.

27. NOT USED

28. Essential CCW is provided to the Makeup Pumps, bypassing CC1460.

29. NOT USED

30. Failure of Circuit 1PD135A would result in inability to remotely operate MS106; therefore, manually operate MS106. Failure of Circuit 2PBF1124A or 2CBF1124B would result in inability to remotely operate MS107; therefore, trip Breaker BF1124 at F11A and manually operated MS107.

FIRE AREA DUCT

4.6.DUCT.1 Fire Area Description

Fire Area DUCT is made up of several conduit Duct Banks used to route cables to various parts of the plant. These Duct Banks are located below grade.

4.6.DUCT.2 Safe Shutdown Equipment In Fire Area DUCT

There is no Safe Shutdown equipment located in this area. All Safe Shutdown cables are located in conduits surrounded by concrete.

4.6.DUCT.3 Fire Propagation Control

Fire Area DUCT is made up of several Duct Banks that are used to connect various areas of the plant. These Duct Banks are made up of either steel or PVC conduits surrounded by concrete. Each conduit is separated from surrounding conduits by at least 2 inches of concrete. The Duct Banks are below grade and surrounded by earth except at the ends where they terminate. Therefore, a fire in any one conduit would, at best, only damage the cables in that conduit.

4.6.DUCT.4 Fire Detection and Suppression

There is no fire detection or automatic suppression in the Duct Banks.

4.6.DUCT.5 Fire Area DUCT Safe Shutdown Summary

Fire Area DUCT is made up of several Duct Banks with multiple conduits in each Duct Bank. Based on the design of the Duct Banks, a fire could not damage more than the cables in one conduit. This will limit loss of equipment to only one Train and a small portion of that Train. Therefore, Safe Shutdown can be accomplished using existing plant procedures and no detailed Safe Shutdown analysis is required.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: E

TRAIN ACCREDITED FOR SHUTDOWN: 2

4.6.E.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
237	AUX FEED PUMP 1-1 ROOM	19,380	Y	MAN

……

4.6.E.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA E

The following components are located in fire area E.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
AFWS	1	AF3869	MOV	AFWP 1 DISCH TO SG2
	1	AF3870	MOV	AFWP 1 DISCH TO SG1
	1	AF6452	SOV	AFWP 1 FLOW CTRL VLV
	1	ICS038B	MOV	AFPT 1 GOV CTRL VLV
	1	MS5889A	SOV	AFPT 1 STEAM ADMISS VLV
	1	MS733	MAN	AFPT 1 MS IN X-CONN
	1	P14-1	PUMP	TD AUX FW PUMP 1
ESSPWR	1	ZC6452	PNL	AFP #1 CTRL VLV POSITION CONTROLLER
HVAC	1	C73-1	FAN	AFP RM VENT FAN 1
SWS	1	SW1382	MOV	AFP 1 SUCT VLV FROM SW

……

4.6.E.3 Fire Propagation Control

Fire Area E is located in the Auxiliary Building (below the Heater Bay) consisting of Room 237 (elev 565') as shown on Drawing A-222F and A-223F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete barriers (except as noted below).

The south wall of Room 237 contains a 14-inch pipe penetration which interfaces with Room 124 (Fire Area A). This penetration is required in order to avert the consequences of a flooding condition in Room 237. The line is open ended in Room 237 and extends into Room 124 where it terminates in a 14-inch water-style check valve. Based on the construction and low combustible loadings, a fire will not propagate from one fire area to another.

There are two ventilation openings in the ceiling of Room 237 (floor of Room 326, Fire Area II). These openings are not provided with fire dampers. Analysis shows that these openings will not affect Safe Shutdown.

Flood Door 215 separates Room 237 from Room 238 (Fire Area F) and is not a UL listed fire door. Based on the construction of the door and the low combustible loadings, a fire will not propagate from one fire area to the other.

There are penetrations which have penetration seals that do not meet the tested configurations. These non-rated openings have been evaluated and will not allow the propagation of a fire.

Room 237 has structural steel which does not have a 3-hour fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in the room.

4.6.E.4 Fire Detection and Suppression

Fire Area E consists of Room 237 which has fire detection (Fire Detection Zone 237).

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawings A-222F and A-223F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.E.5 Fire Area Safe Shutdown Summary

Train 2 will be used for Safe Shutdown in Fire Area E. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146B			OP-02501 (CLOSE MS106 & MS106A)	27
											1CBE1146C			OP-02501 (CLOSE MS106 & MS106A)	27
											1CBE1146D			OP-02501 (CLOSE MS106 & MS106A)	27
											1CBE1146H			OP-02501 (CLOSE MS106 & MS106A)	27
											1PBE1146A			OP-02501 (CLOSE MS106 & MS106A)	27
											EV3869			OP-02501 (CLOSE MS106 & MS106A)	27
											MV3869			OP-02501 (CLOSE MS106 & MS106A)	27
											NV3869			OP-02501 (CLOSE MS106 & MS106A)	27
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE		OP-02501 (CLOSE AF3871)	OP-02501 (CLOSE AF3871)	14
	AF3872	AFWP 2 DISCH TO SG2	MOV	F	2	O	O	AS IS		H	NONE			N/A	
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	2	O	O/C	FO		H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	7
	ICS038A	AFPT 2 GOV CTRL VLV	MOV	F	2	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE		OP-02501 (CLOSE MS106)	OP-02501 (CLOSE MS106)	28
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271K	PSL4930B	OP-02501 (CLOSE MS106A)	OP-02501 (CLOSE MS106A)	28
											FPSL4930B		OP-02501 (CLOSE MS106A)	OP-02501 (CLOSE MS106A)	28
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	NONE			N/A	
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	NONE			OP-02501 (CLOSE MS106 & MS106A)	14
	MS5889B	AFPT 2 STEAM ADMISS VLV	SOV	F	2	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			OP-02501 (CLOSE MS106 & MS106A)	14
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			N/A	
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-2	CAC FAN 2	FAN	D	2	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	OP-02501 (OPEN CC1407A)	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	OP-02501 (OPEN CC1407B)	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE			N/A	
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1410)	OP-02501 (OPEN CC1410)	16
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	2	C	O	FO		C	NONE		OP-02501 (OPERATE CC1469)	OP-02501 (OPERATE CC1469)	26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	2	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501 (OPERATE CC43)	12,26
	CC2649	CC RETURN HDR 2 VLV	MOV	G	2	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5096	CC HDR 2 IN ISO VLV	MOV	T	2	O/C	O	AS IS		H	NONE			N/A	
	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	2	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	FIS1432D	FLOW SWITCH CCWS PUMP	FS	T	2	ON	ON	OFF		H	NONE			N/A	
	P43-2	CCW PUMP 2	PUMP	T	2	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE			N/A	
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01B)	OP-02501 (CLOSE CF01B)	22
CREVS	C21-2	CTRM EVS FAN 2	FAN	HH	2	OFF	ON	OFF		H	NONE			N/A	
	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	2	OFF	ON	OFF		H	NONE			N/A	
	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	2	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01A	LPI LINE 2 VLV	MOV	A	2	O	O	AS IS		C	NONE			N/A	
	DH07A	BWST ISO VLV A	MOV	AC	2	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	2	C	C	FC		C	NONE			N/A	
	DH14A	DH CLR 2 OUT VLV	SOV	AB	2	O	O	FO		C	NONE			N/A	
	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	2	C	O/C	AS IS		C	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	2	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	2	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112B 1CAC112C 1CAC112F		OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1)	OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1) OP-02501 (TRIP P42-1)	13,29 13,29 13,29
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	13
EDG	DA1148A/B	EDG 2 AIR START VLV	SOV	J	2	C	O	FC		H	NONE			N/A	
	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	2	O	O	N/A		H	NONE			N/A	
	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	2	O/F	ON	OFF		H	NONE			N/A	
	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	2	O/F	O	OFF		H	NONE			N/A	
	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	2	OFF	ON	OFF		C	NONE			N/A	
	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	1	O/F	ON	OFF	P205-2	H	NONE			N/A	
	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	2	O/F	ON	OFF	P201-2	H	NONE			N/A	
	S207-01	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-02	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-03	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
	S207-04	EDG 2 AIR START MOTOR	MTR	J	2	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	2N	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	2P	125VDC STATION BATTERY	BATT	X	2	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	1CAC110C			NOT REQUIRED FOR S/D	7
	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	2	ON	ON	OFF		H	NONE			N/A	
	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	2	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			LOSS OF CH 1/3 INITIATES AFW	14
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			SFAS INITIATED	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS INITIATED	13
	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	2	ON	ON	OFF		H	NONE			N/A	
	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	D1	4.16KV AC SWGR	SWGR	Q	2	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	D2N	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	D2P	125VDC DIST PNL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBC2N	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2P	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	2	FUNC	FUNC	OFF	DBC2P,DBC2N	H	NONE			N/A	7
	DBN	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DBP	125VDC DIST PANEL	MCC	X	2	ON	ON	OFF		H	NONE			N/A	
	DC MCC 2	250/125V DC MCC	MCC	X	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F1	480 V AC MCC F1	SWGR	X	2	ON	ON	OFF		H	NONE			N/A	
	F11A	480VAC MCC	MCC	DF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11B	480VAC MCC	MCC	V	2	ON	ON	OFF		H	NONE			N/A	
	F11C	480VAC MCC	MCC	A	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F11D	480VAC MCC	MCC	G	2	ON	ON	OFF		H	NONE			N/A	
	F11E	480VAC MCC	MCC	B	2	ON	ON	OFF		C	NONE			N/A	
	F12A	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12B	480VAC MCC	MCC	J	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12C	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F12D	480VAC MCC	MCC	BF	2	ON	ON	OFF		H	NONE			N/A	
	F14	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F15	480VAC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F16A	480V AC MCC	MCC	X	2	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	2	ON	ON	OFF		H	NONE			N/A	
	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	2	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4606	DC CONT PWR (MU6406,RC4610A,PORV)	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y2A	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	2	ON	ON	OFF		H	NONE			N/A	
	Y4	120V AC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YBU	120VAC DIST PNL	PNL	X	2	ON	ON	OFF		H	NONE			N/A	
	YF1	120VAC MCC	PNL	J	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	YF2	240/120VAC MCC	PNL	DF	2	ON	ON	OFF		H	NONE			N/A	
	YV2	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YV4	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	YVB	125VDC INVERTER	INV	X	2	ON	ON	OFF		H	NONE			N/A	
	ZC6451	AFP #2 CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
	ZC6460	MDFP CTRL VLV POSITION CONTROLLER	PNL	F	2	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02A	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02B	H	NONE			N/A	
	HP02B	HPI 2 DISCH ISO VLV	MOV	A	2	C	O	AS IS	HP02A	H	NONE			N/A	
	HP31	HPI PMP 2 RECIRC VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	2	OFF	ON	OFF		H	NONE			N/A	
	P198-2	HPI PMP 2 DC LO PUMP	PUMP	A	2	OFF	ON	OFF	P198-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	1CAC111B 1CAC111C 1CAC111F		OP-02501 (TRIP P58-1) OP-02501 (TRIP P58-1) OP-02501 (TRIP P58-1)	SFAS INITIATED SFAS INITIATED SFAS INITIATED	13,29 13,29 13,29
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C133	LV SWGR RM VENT FAN 2	FAN	EE	2	O/F	ON	OFF		H	NONE			N/A	
	C25-3	EDG RM 2 VENT FAN 3	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C25-4	EDG RM 2 VENT FAN 4	FAN	J	2	O/F	ON	OFF		H	NONE			N/A	
	C73-2	AFP RM VENT FAN 2	FAN	F	2	O/F	ON	OFF		H	NONE			N/A	
	C78-2	BATT RM VENT FAN 2	FAN	X	2	O/F	ON	OFF		H	NONE			N/A	
	C99-3	SW PMP RM EXH FAN 3	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	C99-4	SW PMP RM EXH FAN 4	FAN	BF	2	O/F	ON	OFF		H	NONE			N/A	
	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	2	O/C	O	AS IS		H	NONE			N/A	
	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
	HV5336A	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5336B	EDG RM 2 DAMPER	DMPR	J	2	O/C	O	FO		H	NONE			N/A	
	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	2	O/C	O	FC		H	NONE			N/A	
	HV5598	BATT RM 428A ATM DMPR	DMPR	X	2	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	2	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11A)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	2	C	C/O	FC	ICS11B	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP27	HPI TO RCP SEALS	MAN	A	2	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01B)	OP-02501 (OPEN MU01B)	16
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU203	Recirc to Seal Return Stop Valve	MAN	AB	2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU203)	OP-02501(CLOSE MU203)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU32	RC MU ISO VLV	FCV	AB	2	O/C	O	FO	HPIS TRAIN 1&2	H	NONE			N/A	
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU3971	RC MU PUMP SUCT VLV	MOV	AB	2	C	O/C	AS IS	HPIS TRAIN 2	H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6406	MU RECIRC ISO VLV	AOV	AB	2	O	O/C	FO	HPIS TRAIN 2	H	NONE			N/A	
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	NONE			N/A	
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS,P-372B	H	NONE			N/A	
	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P37-2	MU PUMP 2	PUMP	AB	2	O/F	ON	OFF	HPIS TRAIN 2	H	NONE			N/A	
	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	2	O/F	O	OFF	P372D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5875A	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	NI-NI1	SOURCE RANGE IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03B	HPI FLOW INDICATION	IND	FF	2	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : E
TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-4	PRZR LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	2	ON	ON	OFF	LI-SP09A1	H	NONE			N/A	
	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	2	ON	ON	OFF	LI-RC14-1-4	H	NONE			N/A	
	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	2	ON	ON	OFF	PI-SP12A	H	NONE			N/A	
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13A	RCS CODE SAFETY VALVE	SV	D	2	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			SFAS MAY ACTUATE	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	2	OFF	OFF	ON		H	NONE			N/A	14
	HIS6402	CH 2/4 MANUAL START AFPT-2 C5707	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	HIS6404	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57	HIS	FF	2	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD11C			SFRCS ACTUATES	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD31C			SFRCS ACTUATES	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM11B			SFRCS INITIATES ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM31B			SFRCS INITIATES ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-2	SW PUMP 2	PUMP	BF	2	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1357	CAC 2 OUT ISO VLV	SOV	A	2	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1367	CAC 2 IN ISO VLV	MOV	A	2	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1383	AFP 2 SUCT VLV FROM SW	MOV	A	2	C	O/C	AS IS		H	NONE			N/A	
	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	2	O/C	C	AS IS		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	2	O/C	O	FO		H	NONE			N/A	
	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	2	C	O	AS IS		H	NONE			N/A	
	SW2930	SW TO INT FOREBAY VLV	MOV	BG	2	O/C	O	AS IS	SW2929,31,32	H	NONE			N/A	
	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	2	O/C	O	AS IS	SW2929,30,31	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : E

TRAIN 2 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA E TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA E TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11A	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level set-point is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-2	LPI Pump 2	On	Stop P42-2 from the CR after blocking SFAS
P42-1	LPI Pump 1	On	Trip Bkr AC112 at C1
P56-2	CS Pump 2	On	Stop P56-2 from the CR after blocking SFAS
P56-1	CS Pump 1	On	Trip Bkr BE111 at E1
P58-2	HPI Pump 2	On	Stop P58-2 from the CR after blocking SFAS
P58-1	HPI Pump 1	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA E TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    If AF3871 is manually closed, first trip Breaker BF1201 at F12A.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

    Additionally, the following valves may need to be manually operated:

CC1410	Open	MU10A	Open
MU01B	Open	MU11	Direct flow to CWRT
MU02B	Open		

FIRE AREA E TABLE 1 NOTES

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU203 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01B before going below 700 psig.

23. NOT USED

24. Essential CCW is provided to the Makeup Pump Cooler, bypassing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 will therefore be manually operated to place the DHR System in service.

26. The DHR Cooler 1-2 Isolation Valve CC1469 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is airoperated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

27. AF3869 may spuriously open or close upon a hot short to its control circuits. AF3869 may not be able to be opened or closed following an open circuit. Valves MS106 and MS106A will be closed to stop AFWP 1 and prevent feeding the unaccredited steam generator.

28. MS106A may spuriously close; this is of no consequence since its purpose is to supply steam to AFWP 1 (P14-1) and AFWP 1 is not used for SSD in this fire area. If SFRCS spuriously starts AFWP 1 due to loss of power to SFRCS actuation Channel 1, MS106 and MS106A will be manually closed (and Breaker D135 at D1NA and BE1271 at E12B tripped) to stop AFWP 1 and prevent feeding the unaccredited steam generator.

29. For components that are relied upon for Safe Shutdown, the ammeter/over-current protection cables and the power cables are free of fire damage. This ensures that a fire

FIRE AREA E TABLE 1 NOTES

cannot cause a loss of an entire Safe Shutdown Train (e.g. Essential Switchgear Bus C1 or D1) due to a power cable fault and a simultaneous loss of overcurrent protection on the same scheme. These circuits do not impact Safe Shutdown for the following reasons:

System	Component	Power Cable	AM & 50/51 Cable Justification
CCWS	P43-3	1PAC108A Outside Fire Area	1CAC108B Not Req'd for Train 2 SSD
DHRS	P42-1	1PAC112A Outside Fire Area	1CAC112B Not Req'd for Train 2 SSD
HPIS	P58-1	1PAC111A Outside Fire Area	1CAC111B Not Req'd for Train 2 SSD
SWS	P3-1	1PAC107A Outside Fire Area	1CAC107B Not Req'd for Train 2 SSD
	P3-3	2PAD109A Outside Fire Area	2CAD109B Not Req'd for Train 2 SSD

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: EE

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.EE.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
500	RADWST & FUEL HAN…AREA	687	Y	MAN
501	RAD WST …EXH RAN RM	3,652	Y	AUTO
501DC	DUCT CHASE	0	N	MAN
515	PURGE EXH EQUIPMENT RM	56,870	Y	MAN

……

4.6.EE.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA EE

The following components are located in fire area EE.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
AFWS	1	MS106	MOV	AFPT 1 MS IN ISO VLV
	1	MS106A	MOV	AFPT 1 MS IN X-CONN
	2	MS107	MOV	AFPT 2 MS IN ISO VLV
	2	MS107A	MOV	AFPT 2 MS IN X-CONN
CCWS	1/2	T-12	TANK	CCW SURGE TANK
ESSPWR	1	E16A	MCC	480V AC MCC
HVAC	2	C133	FAN	LV SWGR RM VENT FAN 2
	2	HV5314	DMPR	LV SWGR RM 428 DAMPER
SFAS	1/2	PT2001	PT	CTMT Vessel Press Xmtr
	1/2	PT2002	PT	CTMT Vessel Press Xmtr
SFRCS	1/2	PS3687A	PS	CH 2 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3687C	PS	CH 2 MN STM LINE 1 PRESSURE SWITCH
	1/2	PS3687E	PS	CH 4 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3687G	PS	CH 4 MN STM LINE 1 PRESSURE SWITCH
	1/2	PS3687K	PS	CH 2 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3687L	PS	CH 2 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3687M	PS	CH 4 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3687N	PS	CH 4 MN STM LINE 2 PRESSURE SWITCH
	1/2	PS3689B	PS	CH 1 MS LINE 1 PRESSURE SWITCH
	1/2	PS3689D	PS	CH 1 MS LINE 2 PRESSURE SWITCH
	1/2	PS3689F	PS	CH 3 MS LINE 1 PRESSURE SWITCH
	1/2	PS3689H	PS	CH 3 MS LINE 2 PRESSURE SWITCH
	1/2	PS3689K	PS	CH 1 MS LINE 1 PRESSURE SWITCH

4.6.EE.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
SFRCS	1/2	PS3689L	PS	CH 1 MS LINE 1 PRESSURE SWITCH
	1/2	PS3689M	PS	CH 3 MS LINE 1 PRESSURE SWITCH
	1/2	PS3689N	PS	CH 3 MS LINE 1 PRESSURE SWITCH

……

4.6.EE.3 Fire Propagation Control

Fire Area EE is located in the Auxiliary Building, consisting of the Auxiliary Building Ventilation Equipment Area (Fan Alley) (elev 623') as shown on Drawing A-225F.

A fire that originates in this fire area will be contained in this fire area.

This fire area is enclosed by 3-hour rated concrete barriers (except as noted below).

The Floor Hatch (Door 607) between Room 500 (Fire Area EE) and Room 600 (Fire Area DH) is not a UL listed door. Based on the low combustible loadings and construction of the hatch, a fire will not propagate from one fire area to the other.

The Containment Purge Duct penetrates the ceiling of Room 500 (fire Area EE) into Room 600 (Fire Area DH) and the floor of Room 500 into Room 303PC (Fire Area AB).

Based on the low combustible loadings and construction of the ductwork, (no opening in Room 500), a fire will not propagate from one fire area to the other.

There are four Emergency Ventilation System Ducts and one Containment Purge Duct which pass through the floor of Room 501 (Fire Area EE) from Room 427 (Fire Area DF). The ductwork does not have a fire damper installed at the floor. Based on the low combustible loadings, automatic wet-pipe sprinkler system and construction of the ductwork, a fire will not propagate from one fire area to another.

Room 500 has structural steel which has fire-proofing that does not conform with the UL details for a 3-hour fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in this room.

Room 501 has structural steel which has fire-proofing that does not conform with the UL details for a 3-hour fire rating. Based on analysis of the combustible loadings and the automatic wet-pipe sprinklers in this room, the steel will not fail.

Door 517 in Room 501 has had its latch removed and is held closed by two blow-out fasteners. This was to provide a vent path for postulated high energy line breaks. Based on automatic wet-pipe sprinkler protection, low combustible loading, a fire will not spread to Room 514 (Fire Area II).

Room 515 has structural steel which does not have a 3-hour fire rating. The steel supports the ceiling which is not a fire barrier, but has Safe Shutdown conduits embedded in the concrete.

A detailed analysis shows that the steel will not fail based on the combustible loading analysis of the room.

4.6.EE.4 Fire Detection and Suppression

Fire Area EE consists of several rooms. The following areas have fire detection:

1. Radwaste & Fuel Handling HVAC Area, Room 500, Fire Detection Zone FDZ 500

2. Radwaste Exhaust Fan Room, Room 501, Fire Detection Zone FDZ 501

3. Purge Exhaust Equipment Room, Room 515, Fire Detection Zone FDZ 515

Room 501 is provided with an automatic wet-pipe sprinkler system

Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-225F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.EE.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area EE. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling. The Motor-Driven Feed Pump will be used to supply Auxiliary Feedwater to Steam Generator 1.

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	NONE			N/A	27
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	NONE			N/A	27
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	NONE			N/A	27
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6397	MDFP Flow Iso Valve	MAN	II	1	O	O/C	AS IS	AFWS Train 2	H	NONE		OP-02501 (CLOSE FW6397)	OP-02501 (CLOSE FW6397)	27
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	FW6460	MDFP FLOW CTRL VLV	SOV	II	2	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			OP-02501 (CLOSE FW6397)	27
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	27
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1CD135B			USE MDFP	27
											1CD135C			USE MDFP	27
											1PD135A			USE MDFP	27
											1PD135X			USE MDFP	27
											EV106			USE MDFP	27
											MV106			USE MDFP	27
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271B			USE MDFP	27
											1CBE1271C			USE MDFP	27
											1PBE1271A			USE MDFP	27
											EV106A			USE MDFP	27
											MV106A			USE MDFP	27
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188B			USE MDFP	27
											2CBF1188C			USE MDFP	27
											2PBF1188A			USE MDFP	27
											EV107A			USE MDFP	27
											MV107A			USE MDFP	27
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	27
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE		OP-02501 (TRIP P14-1)	OP-02501 (TRIP P14-1)	27
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02501(TRIP P14-2)	OP-02501(TRIP P14-2)	27
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CLR3757A		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CLR3757B		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											FLSLL3757B		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
											FLSLL3757C		OP-02501 (OPEN CC1411A)	OP-02501 (OPEN CC1411A)	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	2CLR3758A		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
											2CLR3758B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
											FLSLL3758B		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
											FLSLL3758C		OP-02501 (OPEN CC1411B)	OP-02501 (OPEN CC1411B)	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	2CSF1724A		MOD 88-0145	BYPASSING CC1460	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	1CSF1714A			OP-02501 (OPERATE CC42, CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	1CLR3757A		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	16
											1CLR3757B		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	16
											FLSLL3757B		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	16
											FLSLL3757C		OP-02501 (OPEN CC2645)	OP-02501 (OPEN CC2645)	16
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE CC42)	OP-02501(CLOSE CC42)	12,26
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CLR3757A		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	16
											1CLR3757B		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	16
											FLSLL3757B		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	16
											FLSLL3757C		OP-02501 (OPEN CC5095)	OP-02501 (OPEN CC5095)	16
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	1CLR3757A		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	16
											1CLR3757B		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	16
											FLSLL3757B		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	16
											FLSLL3757C		OP-02501 (OPEN CC5097)	OP-02501 (OPEN CC5097)	16
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	NONE			N/A	
	T-12	CCW SURGE TANK	TANK	EE	1/2	FUNC	FUNC	N/A		H	NONE			LOW COMBUSTIBLES	31
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209B			EMBEDDED CONDUIT	1*
											1PBE1209A			EMBEDDED CONDUIT	1*
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216B			EMBEDDED CONDUIT	1*
											1CBE1216E			EMBEDDED CONDUIT	1*
											1PBE1216A			EMBEDDED CONDUIT	1*
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CSS	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DEPOWERED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DEPOWERED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE		OP-02501 (OPEN BKR HBBD)	OP-02501 (OPEN BKR HBBD)	35
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D2	4.16KV SWGR	SWGR	Q	2	ON	ON	OFF	AFWS TRAIN 1&2	H	NONE		OP-02501 (REPOWER D2)	OP-02501 (REPOWER D2)	35
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	1PBE118A E16A		MOD 85-0063 MOD 85-0063	RC02A AVAILABLE RC02A AVAILABLE	6**28 6**28
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	1PBE1609A BE1609			RC02A AVAILABLE RC02A AVAILABLE	28 28
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE		OP-02501 (REPOWER F7)	OP-02501 (REPOWER F7)	35

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE		OP-02501 (REPOWER F71)	OP-02501 (REPOWER F71)	35
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	1PD1P12A			POWER SUPPLY NOT REQUIRED	5D
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	APDAN24A			POWER SUPPLY NOT REQUIRED	5D
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	1PBE1616A			ALTERNATE FEED	30
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	1PBE1617A			ALTERNATE FEED	23
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			LOST DUE TO BREAKER COORDINATION	21
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS ACTUATES	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS ACTUATES	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	1CVCS11BC 1CVCS11BE		OP-02501 (THROTTLE ICS11B) OP-02501 (THROTTLE ICS11B)	OP-02501 (THROTTLE ICS11B) OP-02501 (THROTTLE ICS11B)	32 32
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	1CFV100DH 2CFV100AE 2CFV100B 2CFV100BG JT5706			SPURIOUS OPEN NOT POSSIBLE SPURIOUS OPEN NOT POSSIBLE SPURIOUS OPEN NOT POSSIBLE SPURIOUS OPEN NOT POSSIBLE SPURIOUS OPEN NOT POSSIBLE	5C 5C 5C 5C 5C
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	2CFV1001C 2CFV1001F			SPURIOUS OPEN NOT POSSIBLE SPURIOUS OPEN NOT POSSIBLE	5C 5C
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	1CFV101AE 1CFV101B 1CFV101BG 2CFV101DH 2CFV101EG			OPEN CONTACT OPEN CONTACT OPEN CONTACT OPEN CONTACT OPEN CONTACT	5C 5C 5C 5C 5C
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CV1011C 1CV1011F			EMBEDDED CONDUIT EMBEDDED CONDUIT	1* 1*
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	

LEGEND

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Detailed Analysis

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FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	OP-02501 (OPEN MU38)	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	OP-02501 (OPEN MU59A)	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	OP-02501 (OPEN MU59B)	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	OP-02501 (OPEN MU59C)	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	OP-02501 (OPEN MU59D)	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	

LEGEND

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SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	OP-02501 (OPEN WC1743)	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	OP-02501 (OPEN WC1747)	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			LOSS OF POWER	28
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285G		MOD 84-0185	RC239A FOR H/L INTERFACE	34
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	2LSFPT22A			SFAS ACTUATES	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	3LSFPT32A			SFAS ACTUATES	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21E 2CRCPS21L			USE MDFP USE MDFP	27 27
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21I 2CRCPS21L			USE MDFP USE MDFP	27 27
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41E 2CRCPS41L			USE MDFP USE MDFP	27 27
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41I 2CRCPS41L			USE MDFP USE MDFP	27 27
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21G 2CRCPS21L			USE MDFP USE MDFP	27 27
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21H			USE MDFP	27

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			USE MDFP	27
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41G 2CRCPS41L			USE MDFP USE MDFP	27 27
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41H 2CRCPS41L			USE MDFP USE MDFP	27 27
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11F 1CRCPS11L			USE MDFP USE MDFP	27 27
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11J 1CRCPS11L			USE MDFP USE MDFP	27 27
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31F 1CRCPS31L			USE MDFP USE MDFP	27 27
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31J 1CRCPS31L			USE MDFP USE MDFP	27 27
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11G 1CRCPS11L			USE MDFP USE MDFP	27 27
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11H 1CRCPS11L			USE MDFP USE MDFP	27 27
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31G 1CRCPS31L			USE MDFP USE MDFP	27 27
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31H 1CRCPS31L			USE MDFP USE MDFP	27 27
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	27
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	27
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	27
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			SFRCS INITIATES ON LOOP	27
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			N/A	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232B			EMBEDDED CONDUIT	1*

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : EE
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1PBE1232A			EMBEDDED CONDUIT	1*
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			N/A	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
ASSCKT	MV4906	CTRM STANDBY COND 1 DMPR									1PBE1148A	E11E		ASSCKT - MOV	6*
ASSCKT	MC5000A	EMER VNT SYS MOD DMPR 1									1PYE206B			LOST DUE TO BREAKER COORDINATION	21
ASSCKT	MC5000B	EMER VNT SYS MOD DMPR 2									1PYE207B			LOST DUE TO BREAKER COORDINATION	21

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA EE TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA EE TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Solenoid Valve CC42 and Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output Channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AC112 at C1
P56-1	CS Pump 1	On	Stop P56-1 from the CR after blocking SFAS
P56-2	CS Pump 2	On	Trip Bkr BE111 at E1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AC111 at C1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA EE TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA EE TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC2645	Trip Bkr BE1161 at E11D and open CC2645	CC1409	Open
		MU01A	Open
CC5095	Trip Bkr BE1226 at E12A and open CC5095	MU01B	Open
		MU10A	Open
CC5097	Trip Bkr BE1227 at E12A and open CC5097	MU11	Align to CWRT

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B have been deenergized.

19. NOT USED

20. NOT USED

21. YE2/YF2 associated circuits are not coordinated. This results in loss of YE2/YF2. The loss of this panel will cause a reactor trip via ARTS which is acceptable.

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A before going below 700 psig.

23. Circuit 1PBE1617A is an alternate feed to Y3. The primary feed is still available.

24. Essential CCW is provided to the Makeup Pump Cooler, bypassing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 will therefore be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467(CC1469) is closed before opening CC43 and that CC42 and CC43 are closed before opening CC1467(CC1469).

27. For this fire area, the Motor-Driven Feed Pump will be used to supply feedwater to Steam Generator SG 1-1. The Motor-Driven Feed Pump will take suction from the Condensate Storage tanks. In order to prevent overfilling Steam Generator SG 1-2, trip

FIRE AREA EE TABLE 1 NOTES

Auxiliary Feedwater Pumps P14-1 and P14-2 and close Manual Valve FW6397 Motor-Driven Feed Pump to SG 2 Discharge Isolation Valve (Flow Control Valve FW6459 could fail open due to loss of power).

Spurious actuation of the SFRCS feed-only-good SG signal from the pressure sensors or actuation of SFRCS as a result of loss of the unaccredited Train 2 power to SFRCS can be rectified by tripping the AFW Pumps P14-1 and P14-2. Operation of the Motor-Driven Feed Pump is not adversely affected by SFRCS actuation.

28. The only SSD equipment powered from E16A or E16B are the PORV Block Valve, RC11 and the Inverter Y3. Since the PORV (RC2A) is available as a High/Low Pressure Interface, loss of power to RC11 is of no concern. Loss of Y3 causes SFAS to initiate, but SFAS initiation is assumed in Appendix R analysis (See Note 13).

29. NOT USED

30. Circuit 1PBE1616A is an alternate feed to Y1. The primary feed is still available.

31. The CCW Surge Tank is a metal tank filled with water and there is very low combustible loading in the area of the tank.

32. The solenoid valve for ICS11B is normally energized so that the valve positioner can control the valve. A hot short to this circuit would result in the solenoid remaining energized. An open circuit would result in loss of air to the air operator. ICS11B would then remain closed, but would be unable to be opened from the Control Room. This is the same effect as a loss of Instrument Air. Procedure OP-02501 addresses manual operation of ICS11B for this fire area.

33. NOT USED

34. RC239A is in series with RC200 and is not affected by a fire in this fire area. It can be relied upon for the High/Low Pressure Interface.

35. Opening Breaker HBBD at Bus B and repowering Buses D2, F7, and F71 will be required before placing the Motor-Driven Feed Pump in service.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: EF

4.6.EF.1 Fire Area Description

Fire area EF consists of the Emergency Feedwater Facility (EFWF), which is a reinforced concrete structure with an integral Emergency Water Storage Tank (EWST). The EFWF is a separate building, located west of the Auxiliary Building, and contains the major equipment for the Emergency Feedwater System (EFWS).

4.6.EF.2 Safe Shutdown Systems In Fire Area EF

There are no Safe Shutdown components or cables in this fire area.

4.6.EF.3 Fire Propagation Control

This fire area is inside of a robustly constructed concrete building, comprised primarily of 36 inch poured concrete walls with a minimum 24 inch thick poured concrete roof. The Diesel Fuel Oil Tank Room (Room 461) and Battery Room (Room 462) are each separated from the rest of the rooms by 3-hour rated walls, floors, and penetration seals. The outside doors are not fire-rated.

This fire area is a separate building from the power block, and therefore provides the equivalent of 3-hour separation between fire areas containing safe shutdown equipment.

4.6.EF.4 Fire Detection and Suppression

Fire area EF consists of five (5) rooms on three different elevations. The entire fire area has fire detection capability. An automatic sprinkler system covers this entire fire area except the Electrical Equipment Room (Room 460) and Battery Room (Room 462). Manual fire suppression equipment is provided for this fire area. Fire extinguishers and Hose Stations are shown on drawing A-232F.

4.6.EF.5 Fire Area Safe Shutdown Summary

There are no safe shutdown components or cables in this fire area. Therefore, safe shutdown is not affected by a fire in this area.

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: F

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.F.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM No.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
238	AUX FEED PUMP 1-2 ROOM	13,542	Y	MAN

……

4.6.F.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA F

The following components are located in fire area F.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
AFWS	2	AF3871	MOV	AFWP 2 DISCH TO SG1
	2	AF3872	MOV	AFWP 2 DISCH TO SG2
	2	AF6451	SOV	AFWP 2 FLOW CTRL VLV
	2	ICS038A	MOV	AFPT 2 GOV CTRL VLV
	2	MS5889B	SOV	AFPT 2 STEAM ADMISS VLV
	2	MS728	MAN	AFPT 2 MS IN X-CONN
	2	P14-2	PUMP	TD AUX FW PUMP 2
ESSPWR	2	ZC6451	PNL	AFP #2 CTRL VLV POSITION CONTROLLER
	2	ZC6460	PNL	MDFP CTRL VLV POSITION CONTROLLER
HVAC	2	C73-2	FAN	AFP RM VENT FAN 2

……

4.6.F.3 Fire Propagation Control

Fire Area F is located in the Auxiliary Building (below the Heater Bay) consisting of Room 238 (elev 565') as shown on Drawing A-222F and A-223F.

A fire that originates in this fire area will be contained in the fire area. This fire area is enclosed by 3-hour rated concrete barriers (except as noted below).

The south wall of Room 238 contains a 14-inch pipe penetration which interfaces with Room 124 (Fire Area A). This penetration is required in order to avert the consequences of a flooding condition in Room 238. The line is open ended in Room 238 and extends into Room 124 where it terminates in a 14-inch water-style check valve. Based on the construction and low combustible loadings, a fire will not propagate from one fire area to another.

There are two ventilation openings in the ceiling of Room 238 (floor of Room 326, Fire Area II). These openings are not provided with fire dampers. Analysis shows that these openings will not affect Safe Shutdown.

Flood Door 215 separates Room 238 from Room 237 (Fire Area E) and is not a UL listed fire door. Based on the construction of the door and the low combustible loadings, a fire will not propagate from one fire area to the other.

There are penetrations which have penetration seals that do not meet the tested configurations. These non-rated openings have been evaluated and will not allow the propagation of a fire.

Room 238 has structural steel which does not have a 3-hour fire rating. A detailed analysis shows that the steel will not fail based on the combustible loading in the room.

4.6.F.4 Fire Detection and Suppression

Fire Area F consists of Room 238 which has fire detection (Fire Detection Zone 238).

Manual fire suppression equipment is provided for this fire area. Fire extinguish and Hose Stations (HS) are shown on Drawings A-222F and A-223F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.F.5 Fire Area Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area F. Safe Shutdown will be accomplished using the Makeup and Purification System (MUPS) for Reactor Coolant System Inventory Control, a Letdown path and Seal Injection for RCP Seal Cooling.

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1PBE1146A			OP-02501 (CLOSE AF599)	14
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	1PD107A			SPURIOUS CLOSURE NOT CREDIBLE	5B
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	2CBF1201B			OP-02501 (CLOSE MS107/MS107A)	14
											2CBF1201C			OP-02501 (CLOSE MS107/MS107A)	14
											2CBF1201D			OP-02501 (CLOSE MS107/MS107A)	14
											2CBF1201H			OP-02501 (CLOSE MS107/MS107A)	14
											2PBF1201A			OP-02501 (CLOSE MS107/MS107A)	14
											EV3872			OP-02501 (CLOSE MS107/MS107A)	14
											MV3871			OP-02501 (CLOSE MS107/MS107A)	14
											NV3871			OP-02501 (CLOSE MS107/MS107A)	14
	AF599	AFW TO SG2 ISO VLV	MOV	A	2	O	O	AS IS		H	NONE		OP-02501 (CLOSE AF599)	OP-02501 (CLOSE AF599)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	NONE			N/A	
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	NONE			N/A	
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	NONE			N/A	
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	NONE			N/A	
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	NONE			N/A	
	MS107	AFPT 2 MS IN ISO VLV	MOV	EE	2	C	O	AS IS		H	2CBF1124F	PS107B	OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											2CBF1124K	PS107A	OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											2CBF1124P	PS107D	OP-02501 (CLOSE MS017)	OP-02501 (CLOSE MS107)	14
											2CBF1124R	PS107C	OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											2CBF1124V	PSL4931A	OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											FPS107A		OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											FPS107B		OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											FPS107C		OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											FPS107D		OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
											FPSL4931A		OP-02501 (CLOSE MS107)	OP-02501 (CLOSE MS107)	14
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188K	PSL4931B	OP-02501 (CLOSE MS107A)	OP-02501 (CLOSE MS107A)	14
											FPSL4931A		OP-02501 (CLOSE MS107A)	OP-02501 (CLOSE MS107A)	14
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	NONE			N/A	
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE			OP-02501 (CLOSE MS107/MS107A)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	BPAD210H			NOT REQUIRED FOR S/D	7
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			N/A	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			N/A	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	NONE			N/A	
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	NONE			N/A	
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407A)	SFAS INITIATED	13
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1407B)	SFAS INITIATED	13
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	NONE		OP-02501 (OPEN CC1409)	OP-02501 (OPEN CC1409)	16

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	NONE			N/A	
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411A)	SFAS INITIATED	13
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN CC1411B)	SFAS INITIATED	13
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	NONE		MOD 88-0145	N/A	24
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	NONE		OP-02501 (OPERATE CC1467)	OP-02501 (OPERATE CC1467)	26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	NONE			OP-02501(OPERATE CC43)	12,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	NONE			N/A	
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE			N/A	
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	12,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	NONE			N/A	
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	NONE			N/A	
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	NONE			N/A	
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	3PACD1A			EMBEDDED CONDUIT	1*
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	NONE		OP-02501 (CLOSE CF01A)	OP-02501 (CLOSE CF01A)	22
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	NONE			N/A	
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	NONE			N/A	
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	NONE			N/A	
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			N/A	
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	NONE			OP-02501 (TRIP P56-1)	13
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	NONE			OP-02501 (TRIP P56-2)	13
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	NONE		OP-02501 (TRIP P56-1)	OP-02501 (TRIP P56-1)	13
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	NONE		OP-02501 (TRIP P56-2)	OP-02501 (TRIP P56-2)	13
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	NONE			N/A	
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	NONE			N/A	
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	NONE		MOD 89-0089	VALVE DE-ENERGIZED	18

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	NONE		OP-02501 (OPEN DH21 & 23)	VALVE DE-ENERGIZED	25
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	NONE			N/A	
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	NONE			N/A	
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	NONE			N/A	
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	NONE			N/A	
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	NONE			N/A	
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	NONE			N/A	
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	NONE			N/A	
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-1)	SFAS INITIATED	13
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	NONE		OP-02501 (TRIP P42-2)	SFAS INITIATED	13
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	NONE			N/A	
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	NONE			N/A	
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	NONE			N/A	
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	NONE			N/A	7
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE				
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	NONE			N/A	
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			N/A	
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	NONE			LOSS SFRCS CH 2/4 INITIATES AFW	14
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	NONE			N/A	
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	NONE			N/A	
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	NONE			N/A	
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			N/A	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC3716										NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			N/A	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	NONE			N/A	
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	NONE			N/A	
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	NONE			N/A	
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-1)	SFAS INITIATED	13
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	NONE		OP-02501 (TRIP P58-2)	SFAS INITIATED	13
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			N/A	
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	NONE		OP-02501 (THROTTLE ICS11B)	LOSS OF AIR	12
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	NONE			N/A	
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	NONE			N/A	
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	NONE			N/A	
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	NONE			N/A	
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP1556)	OP-02501 (OPEN HP1556)	16
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			N/A	
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02501 (OPEN HP29)	OP-02501 (OPEN HP29)	16
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE		OP-02501 (OPEN MU01A)	OP-02501 (OPEN MU01A)	16
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	NONE			N/A	
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02A)	OP-02501 (OPEN MU02A)	13
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	NONE		OP-02501 (OPEN MU02B)	OP-02501 (OPEN MU02B)	16
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	NONE		OP-02501 (OPEN MU03)	OP-02501 (OPEN MU03)	13
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	NONE		OP-02501 (OPEN MU10A)	OP-02501 (OPEN MU10A)	16
	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	NONE		OP-02501 (ALIGN MU11 TO CWRT)	OP-02501 (ALIGN MU11 TO CWRT)	16
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02501 (CLOSE MU182)	OP-02501 (CLOSE MU182)	16
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	NONE			OP-02501 (OPERATE MU214 & MU216)	16
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	NONE			N/A	
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	16
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN MU208)	OP-02501 (OPEN MU208)	16
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	NONE		OP-02501 (OPEN MU38)	SFAS INITIATED	13
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59A)	SFAS INITIATED	13
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59B)	SFAS INITIATED	13
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59C)	SFAS INITIATED	13
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	NONE		OP-02501 (OPEN MU59D)	SFAS INITIATED	13
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	NONE			N/A	
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	NONE			N/A	
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66A)	OP-02501 (OPEN MU66A)	13
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66B)	OP-02501 (OPEN MU66B)	13
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66C)	OP-02501 (OPEN MU66C)	13
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	NONE		OP-02501 (OPEN MU66D)	OP-02501 (OPEN MU66D)	13
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02501 (OPEN MU97)	OP-02501 (OPEN MU97)	16
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	NONE			N/A	
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	NONE			N/A	
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC119)	OP-02501 (OPEN WC119)	16
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02501 (OPEN WC120)	OP-02501 (OPEN WC120)	16

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	NONE			N/A	
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1743)	LOSS OF AIR	12
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	NONE		OP-02501 (OPEN WC1747)	LOSS OF AIR	12
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	NONE			N/A	
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE			N/A	
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	NONE			N/A	
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	NONE			N/A	
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	NONE			N/A	
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	NONE			N/A	
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	NONE			N/A	
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE			N/A	
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	NONE			N/A	
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	NONE			N/A	
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	NONE			N/A	
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	NONE			N/A	
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	NONE			N/A	
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	NONE			N/A	
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	NONE			N/A	
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	NONE			N/A	
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	NONE			N/A	
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	PTRC2A3										NONE			N/A	13
	PTRC2A4										NONE			N/A	13
	PTRC2B3										NONE			N/A	13
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	NONE			N/A	13
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	NONE			N/A	14
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	NONE			N/A	14
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	NONE			N/A	14
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	NONE			N/A	14
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD21B			SFRCS ACTUATES	14
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD41B			SFRCS ACTUATES	14
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	NONE			N/A	14
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM21B			INITIATES SFRCS ON LOOP	14

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : F
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	NONE			INITIATES SFRCS ON LOOP	14
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM41B			INITIATES SFRCS ON LOOP	14
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	NONE			N/A	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	NONE			N/A	
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	NONE			N/A	7
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	NONE			N/A	
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	NONE			N/A	
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	NONE			N/A	
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	NONE			N/A	
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	NONE			N/A	
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	NONE			N/A	
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	NONE			N/A	
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	NONE			N/A	
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	NONE			N/A	
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	NONE			N/A	
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	NONE			N/A	
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE			N/A	

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA F TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent upstream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA F TABLE 1 NOTES

9. NOT USED

10. NOT USED

11. NOT USED

12. Due to loss of Instrument Air, the following valves must be manually operated for Safe Shutdown:

ICS11B	Throttle
WC1743	Open
WC1747	Open

CC1495 also fails closed on loss of air. Manual Bypass Valve CC43 will be operated.

At least 30-minutes are available to complete the manual action unless otherwise noted.

13. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

Due to loss of power to Complimentary Channels, SFAS could actuate. This actuation could operate the following components.

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530, 1531	CS Iso Vlv	Open	Stop P56-1, -2
P42-1	LPI Pump 1	On	Stop P42-1 from the CR after blocking SFAS
P42-2	LPI Pump 2	On	Trip Bkr AD112 at D1
P56-1	CS Pump 1	On	Stop P56-1 from the CR after blocking SFAS
P56-2	CS Pump 2	On	Trip Bkr BF111 at F1
P58-1	HPI Pump 1	On	Stop P58-1 from the CR after blocking SFAS
P58-2	HPI Pump 2	On	Trip Bkr AD111 at D1
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B and Trip Bkr BE1173 at E11B & BF1158 at F11B
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B and Trip Bkr BE1176 at E11B & BF1159 at F11B
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A and Trip BE1171 at E11B
MU03	RC Lt Dn Cooler Out	Closed	Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A and Trip BE1174 at E11B

FIRE AREA F TABLE 1 NOTES

COMPONENT	DESCRIPTION	EFFECT	ACTION
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B and Trip BE1175 at E11B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C and Trip BE1177 at E11B
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D and Trip BE1178 at E11B
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D

14. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS.

    The steam generator level control and steam generator level indication for the nonaccredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B).

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW flow to the accredited steam generator may be required.

    Trip the following breakers before operating the following valves:

Valve	Breaker
MS107	BF1124 at F11A
MS107A	BF1188 at F11B

15. NOT USED

16. RCP Seal Integrity is maintained by prompt restoration of seal cooling, or by performing a plant cooldown to below 350 degrees F as discussed in section 3.6.3. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control.

    RCP Seal Return, Seal Injection and Letdown Flow

    The following manual valves will need to be operated:

MU97	Open	MU216	Throttle
MU182	Close	WC119	Open
MU214	Close	WC120	Open

FIRE AREA F TABLE 1 NOTES

Additionally, the following valves may need to be manually operated:

CC1409	Open	MU10A	Open
MU01A	Open	MU11	Align to CWRT
MU02B	Open		

RCS Inventory Control

After transferring the Makeup suction to the BWST, MU206 will be manually closed after opening MU208, HP29, and HP1556 to route MUPS Recirc to the BWST rather than the Makeup Tank.

17. NOT USED

18. To prevent spurious operation, Valves DH09A and DH09B are deenergized.

19. NOT USED

20. NOT USED

21. NOT USED

22. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A before going below 700 psig.

23. NOT USED

24. Essential CCW has been provided to the Makeup Pump Cooler, bypassing CC1460.

25. Valves DH11 and DH12 are depowered. Bypass Valves DH21 and DH23 can be manually operated to place the DHR System in service.

26. The DHR Cooler 1-1 Isolation Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS cooldown.

    The CCW to Nonessential Isolation Valve CC1495 is normally opened. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened. (NOTE: Verify CC1467(CC1469) is closed before opening CC43 and that CC43 is closed before opening CC1467 (CC1469).

FIRE HAZARDS ANALYSIS

FIRE AREA EVALUATION

FIRE AREA: FF

TRAIN ACCREDITED FOR SHUTDOWN: 1

4.6.FF.1 FIRE AREA DESCRIPTION

Room numbers and fire protection features for this fire area are as follows:

ROOM NO.	ROOM DESCRIPTION	COMBUSTIBLE LOADING (BTU/FT2)	DETECTION Y/N	SUPPRESSION MAN/AUTO
502	CONTROL CABINET ROOM	6,868	Y	MAN
503	OPERATOR STUDY ROOM	24,000	Y	MAN
504	CONTROL RM KITCHEN	9,600	Y	MAN
505	CONTROL ROOM	24,000	Y	MAN
506	CONTROL RM TOILET	1,600	Y	MAN
507	SHIFT SUPERVISORS OFFICE	24,000	Y	MAN
509	CONTROL RM PASSAGE	16,000	N	MAN
510	COMPUTER ROOM	40,000	Y	MAN
511	SHIFT MANAGERS OFFICE	24,000	Y	MAN
512	SS ADMIN ASSISTS OFFICE	36,000	Y	MAN
513	TOILET	1,600	Y	MAN

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4.6.FF.2 SAFE SHUTDOWN SYSTEMS IN FIRE AREA FF

The following components are located in fire area FF.
See Appendix B-2 for a list of circuits / cables in this fire area.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	1 / 2	C5705	PNL	CONT POWER (PORV IND LIGHTS
	1	C5706	PNL	AC CONT PWR (SV6407 INDICATION)
	1	C5708	PNL	CNTRL POWER PROCESS MON (DIXSON)
	2	C5709	PNL	CNTRL POWER PROCESS MON (DIXSON)
	1	C5716	PNL	CONTROL POWER PROCESS MON (DIXSON)
	1	C5717	PNL	CONT POWER SV IND LIGHTS
	2	C5755C	PNL	SFAS POWERED SV CH.2
	2	C5755E	PNL	CONTROL ROOM REACT PROT. SYS PNL(CH.2)
	2	C5755G	PNL	POST ACCIDENT MON. RACK (CH.2)
	2	C5756D	PNL	SFAS LOGIC ACTUATED CH2
	2	C5759B	PNL	CH B INST PWR (RCS LOOP 2 TEMP, PZR LV
	2	C5759C	PNL	INST POWER NNI-X BUS
	2	C5760D	PNL	CONT POWER TO C5759B
	1/2	C5761A	PNL	CH 1 SFRCS XMTR & LOGIC
	1	C5762A	PNL	CONTROL POWER TO SFRCS CH3 RELAY

4.6.FF.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
ESSPWR	1	C5762C	PNL	SFAS POWERED SV CH.1
	1	C5762D	PNL	SFAS LOGIC ACTUATED CH 1
	1	C5762E	PNL	CONTROL ROOM REACT PROT. SYS PNL (CH1)
	1	C5763A	PNL	POST ACCIDENT MON. SYS PNL (CH1)
	1	C5763D	PNL	SFAS POWERED SV CH.1
	2	C5792	PNL	CONTROL ROOM SFRCS CABINET (CH2)
	1/2	C5792A	PNL	CH 2 SFRCS XMTR & LOGIC
	2	C5798	PNL	POST ACCIDENT MON. IND. PNL (CH2)
	1	C5799	PNL	POST ACCIDENT MON. IND. PNL (CH1)
NI	1	NI-5874A	IND	SOURCE RANGE IND
	2	NI-5875A	IND	SOURCE RANGE IND
	2	NI-NI1	IND	SOURCE RANGE IND
	1	NI-NI2	IND	SOURCE RANGE IND
NNI	2	FI-MU31	IND	MUP TRAIN 2 FLOW IND
	2	FI-MU34	IND	MUP TRAIN 2 FLOW IND
	1	FI6425	IND	RC MU FLOW-HI RANGE
	1	FI6435	IND	RC MU FLOW-LOW RANGE
	2	FYI-HP03A	IND	HPI FLOW INDICATION
	2	FYI-HP03B	IND	HPI FLOW INDICATION
	1	FYI-HP03C	IND	HPI FLOW INDICATION
	1	FYI-HP03D	IND	HPI FLOW INDICATION
	1	LI-RC14-3	IND	PRZR LEVEL IND
	2	LI-RC14-4	IND	PRZR LEVEL IND
	2	LI-SP09A1	IND	SG1-2 START-UP LEVEL IND
	2	LI-SP09A8	IND	SG1-2 START-UP LEVEL IND (C5792A)
	2	LI-SP09A8A	IND	SG1-2 START-UP LEVEL IND (C5710)
	2	LI-SP09A9	IND	SG1-2 START-UP LEVEL IND (C5792A)
	1	LI-SP09B1	IND	SG1-1 START-UP LEVEL IND
	1	LI-SP09B8	IND	SG1-1 START-UP LEVEL IND (C5761A)
	1	LI-SP09B8A	IND	SG1-1 START-UP LEVEL IND (C5708)
	1	LI-SP09B9	IND	SG1-1 START-UP LEVEL IND (C5761A)
	2	LRS-RC14	REC	PRZR LEVEL RECORDER
	2	PI-6365A	IND	RCS LOOP 2 EXTENDED RANGE PRESS
	1	PI-6365B	IND	RCS LOOP 1 EXTENDED RANGE PRESS
	2	PI-RC2A3	IND	RCS LOOP 2 PRESS IND
	2	PI-RC2A4	IND	RCS LOOP 2 PRESS IND
	1	PI-RC2B3	IND	RCS LOOP 1 PRESS IND
	1	PI-RC2B4	IND	RCS LOOP 1 PRESS IND
	2	PI-SP12A	IND	SG1-2 OUTLET PRESS IND
	2	PI-SP12A1-A	IND	SG1-2 OUTLET PRESS IND
	1	PI-SP12B	IND	SG1-1 OUTLET PRESS IND
	1	PI-SP12B2	IND	SG1-1 OUTLET PRESS IND
	2	TI-RC3A5	IND	RCS LOOP 2 HOT LEG TEMP
	2	TI-RC3A6	IND	RCS LOOP 2 HOT LEG TEMP

4.6.FF.2 Cont.

SYSTEM	TRAIN	COMPONENT	TYPE	DESCRIPTION
NNI	1	TI-RC3B5	IND	RCS LOOP 1 HOT LEG TEMP
	1	TI-RC3B6	IND	RCS LOOP 1 HOT LEG TEMP
	2	TI-RC4A2	IND	RCS LOOP 2 COLD LEG TEMP
	2	TI-RC4A4	IND	RCS LOOP 2 COLD LEG TEMP
	1	TI-RC4B2	IND	RCS LOOP 1 COLD LEG TEMP
	1	TI-RC4B4	IND	RCS LOOP 1 COLD LEG TEMP
SFAS	1/2	C5755D	PNL	SFAS CH.2 LOGIC PANEL
	1/2	C5762D	PNL	SFAS CH.1 LOGIC PANEL
	1/2	C5763D	PNL	SFAS CH.3 LOGIC PANEL
	1/2	C5765D	PNL	SFAS CH.4 LOGIC PANEL
	1/2	LI1525A	LI	BWST Level Indicator
	1/2	LI1525B	LI	BWST Level Indicator
	1/2	LI1525C	LI	BWST Level Indicator
	1/2	LI1525D	LI	BWST Level Indicator
	1/2	LSL1525A1	LSL	BWST Level Switch
	1/2	LSL1525B1	LSL	BWST Level Switch
	1/2	PI2000	PI	CTMT Vessel Press Indicator
	1/2	PI2001	PI	CTMT Vessel Press Indicator
	1/2	PI2002	PI	CTMT Vessel Press Indicator
	1/2	PI2003	PI	CTMT Vessel Press Indicator
	1/2	PSH2000B	PSH	CTMT Vessel Press Switch
	1/2	PSH2001B	PSH	CTMT Vessel Press Switch
	1/2	RI2004	RI	CTMT Vessel Radiation Ind
	1/2	RI2005	RI	CTMT Vessel Radiation Ind
	1/2	RI2006	RI	CTMT Vessel Radiation Ind
	1/2	RI2007	RI	CTMT Vessel Radiation Ind
	1/2	RSH2004A	RSH2	CTMT Vessel Radiation Sw
	1/2	RSH2005A	RSH	CTMT Vessel Radiation Sw
SFRCS	1/2	HIS100B	HIS	LOGIC CH 2 TRIP BLOCK/PERMISSIVE
	1/2	HIS100C	HIS	LOGIC CH 4 TRIP BLOCK/PERMISSIVE
	1/2	HIS101B	HIS	LOGIC CH 1 TRIP BLOCK/PERMISSIVE
	1/2	HIS101C	HIS	LOGIC CH 3 TRIP BLOCK/PERMISSIVE
	1	HIS3869B	HIS	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)
	1	HIS3870B	HIS	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)
	2	HIS3871B	HIS	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)
	2	HIS3872B	HIS	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)
	2	HIS603B	HIS	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)
	1	HIS611B	HIS	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)
	1	HIS6401	HIS	CH 1/3 MANUAL START AFPT-1 C5707
	2	HIS6402	HIS	CH 2/4 MANUAL START AFPT-2 C5707
	1	HIS6403	HIS	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57
	2	HIS6404	HIS	CH 2/4 MAN STRT AFPT-2 & ISOL SG-2 C57

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4.6.FF.3 Fire Propagation Control

Fire Area FF consists of the Control Room complex and is located in the Auxiliary Building (El 623') as shown on drawing A-225F.

A fire that originates in this fire area will be contained in the fire area.

The floors, walls and ceilings are reinforced concrete or concrete block having a fire resistance rating of 3-hours (except as noted below).

The block walls into the elevator shaft (Fire Area UU) do not meet a tested configuration. Based on the low combustible loading and the construction of the block walls, a fire will not propagate from one fire area to the other.

Door 509 (separating II from FF) is not a UL fire Door. This door is a steel double door, used as part of the pressure boundary for the Control Room and was built to UL standards for a fire door. Based on the door's design and construction and the low combustible loading in the area, a fire will not propagate from one fire area to the other.

The structural steel fireproofing in rooms 502, 505, and 510 is not installed in accordance with the UL design in that the attachments (e.g. conduit supports) are not adequately fire-proofed. These rooms are provided with a noncombustible suspended acoustic tile ceiling below the structural steel. Based on the minor deficiencies in the fire-proofing, the low combustible loading and the barrier provided by the ceiling tiles, a fire in this area will not cause failure of the structural steel.

The Control Room (Room 505) and Control Cabinet Room (502) are separated from Rooms 503 (Operator Study Room), 504 (Control Room Kitchen), 509 (Control Room Passage), 510 (Computer Room), 511 (Shift Supervisor's Office), 512 (Administrative Assistant's Office), and 513 (Toilet) by 1-hour fire-rated walls.

There are several small penetrations which do not conform to tested configurations. Based on the construction and low fire loadings, a fire will not pass through these penetrations.

The Control Room is protected from and does not contain high-energy equipment such as switchgear, power transformers, rotating equipment, or potential sources of missiles or pipe whip. The separation distance between redundant Class 1E equipment and circuits internal to the control board is discussed in section 8 of the USAR.

Analog signal isolation devices, with individual power supplies, are provided between the sensing channel and the logic channel. Digital signal isolation devices are provided between the logic channel trip bistables and the output modules of the actuation channel.

Physical separation between redundant channels of the RPS is accomplished by locating each redundant channel in a separate cabinet assembly. The cabinet assembly provides physical protection of the cabinet internal equipment from external hazards such as missiles and fire. All openings between the Cable Spreading Room and RPS cabinets through which RPS cables pass, are sealed to prevent the passage of fire, smoke and fumes. These seals are silicone foam base.

Internal to the RPS cabinets, the separation of redundant channels is maintaine by isolation device circuits. The isolation device circuits have been tested and analyzed to protect against short circuits, open circuits, grounds, and the application of AC or DC potential.

The isolation device circuits include the isolation device, internal wiring, an field wiring connection terminal strips. The isolation device is an isolation amplifier for analog signals and a relay for digital signals. The isolation device circuit internal wiring and field connection terminal strips have the same characteristics (flame retardancy, maximum operating temperature, dielectric strength) as the wiring and terminal strips used internally within the cabinets for 1E service.

5.FF.4 Fire Detection and Suppression

Fire Area FF consists of various rooms. The following rooms have detection.

1. Control Cabinet Room 502 with detectors in Panels C5715, C5716, C5717 and C5718, Fire Detection Zone FDZ 505

2. Operator Study Room, Room 503, Fire Detection Zone FDZ 505

3. Kitchen, Room 504, Fire Detection Zone FDZ 505

4. Control Room, Room 505, Fire Detection Zone FDZ 505

5. Toilet, Room 506, Fire Detection Zone FDZ 505

6. Shift Supervisor's Office, Room 507, Fire Detection Zone FDZ 505

7. Shift Manager's Office, Room 511, Fire Detection Zone FDZ 505

8. Computer Room, 510 (one below floor), Fire Detection Zone FDZ 505

9. Shift Supervisor Administrative Assistant's Office, Room 512, Fire Detection Zone FDZ 505

10. Toilet, Room 513, Fire Detection Zone FDZ 505

Manual fire suppression equipment is provided for this area. Fire extinguishers and Hose Stations (HS) are shown on Drawing A-225F.

In the event of a fire, isolation and smoke venting will be accomplished in accordance with the Pre-Fire Plans.

4.6.FF.5 Fire Area FF Safe Shutdown Summary

Train 1 will be used for Safe Shutdown in Fire Area FF. Safe Shutdown will be accomplished from the Auxiliary Shutdown Panel using the Makeup and Purification System (MUPS) for Reactor Coolant System inventory control, a Letdown path, and Seal Injection for RCP Seal Cooling. The RCP seals will be restaged using flow through the RCP Seal Return line.

SAFE SHUTDOWN ANALYSIS

FIRE AREA : FF

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	AF3869	AFWP 1 DISCH TO SG2	MOV	E	1	C	C	AS IS		B H	1CBE1146F		OP-02519 (CLOSE AF599)	OP-02519 (CLOSE AF599)	12
											1CBE1146G		OP-02519 (CLOSE AF599)	OP-02519 (CLOSE AF599)	12
											C5706		OP-02519 (CLOSE AF599)	OP-02519 (CLOSE AF599)	12
											C5762A		OP-02519 (CLOSE AF599)	OP-02519 (CLOSE AF599)	12
	AF3870	AFWP 1 DISCH TO SG1	MOV	E	1	O	O	AS IS		H	1CD107F		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
											1CD107G		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
											C5706		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
											C5762A		OP-02519 (OPEN AF3870)	OP-02519 (OPEN AF3870)	13
	AF3871	AFWP 2 DISCH TO SG1	MOV	F	2	C	C	AS IS		B H	2CBF1201F			OP-02519 (TRIP P14-2)	14
											2CBF1201G			OP-02519 (TRIP P14-2)	14
											C5706			OP-02519 (TRIP P14-2)	14
											C5792			OP-02519 (TRIP P14-2)	14
	AF608	AFW TO SG1 ISO VLV	MOV	AB	1	O	O	AS IS		H	1CBE1160I			SPURIOUS CLOSURE NOT POSSIBLE	15
											C5706			SPURIOUS CLOSURE NOT POSSIBLE	15
	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	1	O	O/C	FO		H	1CLY6453A		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											1CLY6453B		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											1LLC6452B			SPURIOUS CLOSURE NOT POSSIBLE	15
											C5706		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											C5717		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
											C5763C		OP-02519 (OPEN AF6452)	OP-02519 (OPEN AF6452)	16
	FW6459	MDFP FLOW CTRL VALVE	SOV	II	1	O	O/C	FO	AFWS TRAIN 1&2	H	1CLC6459B			NOT REQUIRED FOR S/D	7
											1CLC6459H			NOT REQUIRED FOR S/D	7
											1LLC6459A			NOT REQUIRED FOR S/D	7
											C5709			NOT REQUIRED FOR S/D	7
	ICS038B	AFPT 1 GOV CTRL VLV	MOV	E	1	O	O/C	AS IS		H	1CAFPT01B		OP-02519(CONTROL ICS038B AT ASP)	OP-02519(CONTROL ICS038B AT ASP)	16
											C5706		OP-02519(CONTROL ICS038B AT ASP)	OP-02519(CONTROL ICS038B AT ASP)	16
	MS106	AFPT 1 MS IN ISO VLV	MOV	EE	1	C	O	AS IS		H	1CD135G		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
											1CD135I		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
											C5706		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
											C5762A		OP-02519 (OPEN MS106)	OP-02519 (OPEN MS106)	17
	MS106A	AFPT 1 MS IN X-CONN	MOV	EE	1	O	O/C	AS IS	MS106	B H	1CBE1271G			OP-02519 (TRIP P14-2)	18
											1CBE1271H			OP-02519 (TRIP P14-2)	18
											1CBE1271J			OP-02519 (TRIP P14-2)	18
											C5706			OP-02519 (TRIP P14-2)	18
											C5762A			OP-02519 (TRIP P14-2)	18
	MS107A	AFPT 2 MS IN X-CONN	MOV	EE	2	O	O/C	AS IS	MS107	B H	2CBF1188H			OP-02519 (TRIP P14-2)	18
											2CBF1188J			OP-02519 (TRIP P14-2)	18
											2CBF1188M			OP-02519 (TRIP P14-2)	18
											C5709			OP-02519 (TRIP P14-2)	18
											C5792			OP-02519 (TRIP P14-2)	18
	MS5889A	AFPT 1 STEAM ADMISS VLV	SOV	E	1	C	O	FO		H	1CV5889AB		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AC		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AG		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											1CV5889AH		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											C5709		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
											C5762A		OP-02519 (OPEN MS5889A)	OP-02519 (OPEN MS5889A)	19
	P14-1	TD AUX FW PUMP 1	PUMP	E	1	OFF	ON	OFF		H	NONE			N/A	
	P14-2	TD AUX FW PUMP 2	PUMP	F	2	OFF	ON	OFF		H	NONE		OP-02519 (TRIP P14-2)	OP-02519 (TRIP P14-2)	14
	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	BCAD210D			NOT REQUIRED FOR S/D	7
											BCAD210E			NOT REQUIRED FOR S/D	7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
AFWS	P241	MTR DRIVEN FEED PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	C5712		OP-2519 (ENSURE DISCH VLV CLSD)	OP-2519 (ENSURE DISCH VLV CLSD)	74
	P242-1	MDFP AUX LUBE OIL PUMP	PUMP	II	1/2	OFF	ON	OFF	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
	P242-2	MDFP SHAFT DRVN LO PUMP	PUMP	II	1/2	FUNC	FUNC	N/A	AFWS TRAIN 1&2	H	NONE			NOT REQUIRED FOR S/D	7
CACS	C1-1	CAC FAN 1	FAN	D	1	O/F	ON	OFF		H	1CBE1401G		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											1CBE1401J		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											1CBE1401K		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											C5716		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
											C5763C		OP-02519 (MANUALLY START)	OP-02519 (MANUALLY START)	20
	C1-3	CAC FAN 3	FAN	D	1/2	O/F	ON	OFF	C1-1, C1-2	H	1CBE1501F			NOT REQUIRED FOR S/D	7
											1CBE1501G			NOT REQUIRED FOR S/D	7
											1CBE1501H			NOT REQUIRED FOR S/D	7
											C5716			NOT REQUIRED FOR S/D	7
											C5763C			NOT REQUIRED FOR S/D	7
CCWS	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1173E	KA,KB	OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
											1CBE1173G		OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
											C5717		OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
											C5762C		OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
											C5763D		OP-02519 (OPEN CC1407A)	OP-02519 (OPEN CC1407A)	22,31
	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1158E		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
											2CBF1158G		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
											C5717		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
											C5755C		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
											C5756D		OP-02519 (OPEN CC1407B)	OP-02519 (OPEN CC1407B)	22,31
	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	1	O/C	O/C	AS IS		H	2CBF1227F	MU01A	OP-02519 (OPEN CC1409)	OP-02519 (OPEN CC1409)	21
											C5703	MU01A	OP-02519 (OPEN CC1409)	OP-02519 (OPEN CC1409)	21
	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	2	O/C	O/C	AS IS		H	2CBF1228F	MU01B		OP-02519 (OPEN CC1409)	21
											C5703	MU01A		OP-02519 (OPEN CC1409)	21
	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	1/2	O	O	AS IS		H	1CBE1176E	KA,KB	OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											1CBE1176G		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											C5717		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
											C5762C		OP-02519 (OPEN CC1411A)	OP-02519 (OPEN CC1411A)	22,31
	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	1/2	O	O	AS IS		H	2CBF1159E		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											2CBF1159G		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											C5717		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
											C5755C		OP-02519 (OPEN CC1411B)	OP-02519 (OPEN CC1411B)	22,31
	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	1/2	O/C	O(M)	FC	HPIS TRAIN 1&2	H	2CSF1724A		MOD 88-0145	BYPASSING CC1460	66
											2CV1460D		MOD 88-0145	BYPASSING CC1460	66
											2CV1460E		MOD 88-0145	BYPASSING CC1460	66
											C5717		MOD 88-0145	BYPASSING CC1460	66
											C5755C		MOD 88-0145	BYPASSING CC1460	66
	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	1	C	O	FO		C	1CV1467C		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
											1CV1467E		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
											C5716		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
											C5762C		OP-02519 (CLOSE/OPEN CC1467)	OP-02519 (CLOSE/OPEN CC1467)	24,26
	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	1	O	O	AS IS		H	NONE			N/A	
	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	1CSF1714A			OP-02519 (OPERATE CC42, CC43)	24,26
											1CV1495C			OP-02519 (OPERATE CC42, CC43)	24,26

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
CCWS	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	1	O	O/C	FC		B H	1CV1495E			OP-02519 (OPERATE CC42,CC43)	24,26
											C5717			OP-02519 (OPERATE CC42, CC43)	24,26
											C5762C			OP-02519 (OPERATE CC42, CC43)	24,26
	CC2645	CC RETURN HDR 1 VLV	MOV	G	1	O/C	O/C	AS IS	HPIS TRAIN 1&2	H	1CBE1161F		OP-02519 (OPEN CC2645)	OP-02519 (OPEN CC2645)	23
											C5720		OP-02519 (OPEN CC2645)	OP-02519 (OPEN CC2645)	23
	CC42	Nonessential CCW Isolation Valve	MAN	U	1/2	O	O/C	AS IS		H	NONE		OP-02501(CLOSE CC42)	OP-02501(CLOSE CC42)	24,26
	CC43	Nonessential CCW bypass Valve	MAN	U	1/2	C	O/C	AS IS		H	NONE		OP-02501(OPERATE CC43)	OP-02501(OPERATE CC43)	24,26
	CC5095	CC HDR 1 IN ISO VLV	MOV	T	1	O/C	O	AS IS		H	1CBE1226F		OP-02519 (OPEN CC5095)	OP-02519 (OPEN CC5095)	27
											C5720		OP-02519 (OPEN CC5095)	OP-02519 (OPEN CC5095)	27
	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	1	O/C	O/C	AS IS		H	1CBE1227F		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
											C5720		OP-02519 (OPEN CC5097)	OP-02519 (OPEN CC5097)	27
	FIS1422C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	1	ON	ON	OFF		H	NONE			N/A	
	P43-1	CCW PUMP 1	PUMP	T	1	O/F	ON	OFF		H	1CAC113B		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
											1CAC113C		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
											1CAC113E		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
											C5716		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
											C5763C		OP-02519 (OPERATE LOCALLY)	OP-02519(ISOLATE & OPER LOCALLY)	28
	P43-3	CCW PUMP 3	PUMP	T	1/2	O/F	ON	OFF		H	1CAC108B			NOT REQUIRED FOR S/D	7
											1CAC108H			NOT REQUIRED FOR S/D	7
											1CAC108I			NOT REQUIRED FOR S/D	7
											1CACD2C			NOT REQUIRED FOR S/D	7
											C5715			NOT REQUIRED FOR S/D	7
											C5716			NOT REQUIRED FOR S/D	7
											C5756C			NOT REQUIRED FOR S/D	7
											C5763C			NOT REQUIRED FOR S/D	7
CFS	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	2	O	C	AS IS		B C	2CBF1120F			OP-02519 (CLOSE CF01A)	29
											2CBF1120G	PSH7529A	OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											2CVCF01AB		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											C5716		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											C5755C		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
											PSH7529A		OP-02519 (CLOSE CF01A)	OP-02519 (CLOSE CF01A)	29
	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	1	O	C	AS IS		B C	1CBE1162F			OP-02519 (CLOSE CF01B)	29
											1CBE1162G	PSH7530A	OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											1CVCF01BB		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											C5716		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											C5763D		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
											PSH7530A		OP-02519 (CLOSE CF01B)	OP-02519 (CLOSE CF01B)	29
CREVS	C21-1	CTRM EVS FAN 1	FAN	HH	1	OFF	ON	OFF		H	1CBE1209C			NOT REQUIRED FOR S/D	30
											C5720			NOT REQUIRED FOR S/D	30
	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	1	OFF	ON	OFF		H	1CBE1216E			NOT REQUIRED FOR S/D	30
											1CCEAC1C			NOT REQUIRED FOR S/D	30
											C5720			NOT REQUIRED FOR S/D	30
	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	1	C	O	CLOSED		H	NONE			NOT REQUIRED FOR S/D	30
CSS	CS1530	CTMT SPRAY ISO VLV	MOV	AB	1	C	C	AS IS	P56-1	B H	1CBE1156H			OP-02519 (TRIP P56-1)	31

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
											~~1CBE1156J~~			~~OP-02519 (TRIP P56-1)~~	~~31~~
											C5716			OP-02519 (TRIP P56-1)	31
											C5763C			OP-02519 (TRIP P56-1)	31
	CS1531	CTMT SPRAY ISO VLV	MOV	A	2	C	C	AS IS	P56-2	B H	2CBF1147H			OP-02519 (TRIP P56-2)	31
											2CBF1147J			OP-02519 (TRIP P56-2)	31
											C5716			OP-02519 (TRIP P56-2)	31
											C5756C			OP-02519 (TRIP P56-2)	31
	P56-1	CS PUMP 1	PUMP	AB	1	OFF	OFF	OFF	CS1530	B H	1CBE111B		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											1CBE111C		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											1CBE111E		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											C5716		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
											C5762C		OP-02519 (TRIP P56-1)	OP-02519 (TRIP P56-1)	31
	P56-2	CS PUMP 2	PUMP	A	2	OFF	OFF	OFF	CS1531	B H	2CBF111B		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											2CBF111C		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											2CBF111E		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											C5716		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
											C5755C		OP-02519 (TRIP P56-2)	OP-02519 (TRIP P56-2)	31
DHRS	DH01B	LPI LINE 1 VLV	MOV	AB	1	O	O	AS IS		C	1CBE1106F			SPURIOUS CLOSURE NOT CREDIBLE	32
											1CBE1106J			SPURIOUS CLOSURE NOT CREDIBLE	32
											C5716			SPURIOUS CLOSURE NOT CREDIBLE	32
	DH07B	BWST ISO VLV B	MOV	AC	1	O	O	AS IS		H	1CBE1157F			VALVE DE-ENERGIZED	34
											1CBE1157G			VALVE DE-ENERGIZED	34
											1CBE1157I			VALVE DE-ENERGIZED	34
											C5716			VALVE DE-ENERGIZED	34
											C5762C			VALVE DE-ENERGIZED	34
											C5762D			VALVE DE-ENERGIZED	34
											C5763C			VALVE DE-ENERGIZED	34
											C5763D			VALVE DE-ENERGIZED	34
	DH09A	CTMT SUMP ISO VLV A	MOV	AB	2	C	C	AS IS		B H	2CBF1142E		MOD 89-0089	DE-ENERGIZED	34
											2CBF1142F		MOD 89-0089	DE-ENERGIZED	34
											2CBF1142H		MOD 89-0089	DE-ENERGIZED	34
											C5716		MOD 89-0089	DE-ENERGIZED	34
											C5755C		MOD 89-0089	DE-ENERGIZED	34
											C5755D		MOD 89-0089	DE-ENERGIZED	34
											C5756C		MOD 89-0089	DE-ENERGIZED	34
											C5756D		MOD 89-0089	DE-ENERGIZED	34
	DH09B	CTMT SUMP ISO VLV B	MOV	AB	1	C	C	AS IS		B H	1CBE1112E		MOD 89-0089	DE-ENERGIZED	34
											1CBE1112F		MOD 89-0089	DE-ENERGIZED	34
											1CBE1112H		MOD 89-0089	DE-ENERGIZED	34
											C5716		MOD 89-0089	DE-ENERGIZED	34
											C5762C		MOD 89-0089	DE-ENERGIZED	34
											C5762D		MOD 89-0089	DE-ENERGIZED	33
											C5763C		MOD 89-0089	DE-ENERGIZED	34
											C5763D		MOD 89-0089	DE-ENERGIZED	34
	DH11	DH NORM SUCT LINE VLV	MOV	D	2	C	O/C	AS IS		H/L C	2CBF1130E	PSH7531A/K03	OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											2CBF1130G		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											2CBF1130J		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											C5704		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											C5756D		OP-02519 (OPEN DH21, 23)	ED-ENERGIZED (OPEN DH21, 23)	35
											PSH7531A		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
	DH12	DH NORM SUCT LINE VLV	MOV	D	1	C	O/C	AS IS		H/L C	1CBE1183G		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											1CBE1183J		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
											C5704		OP-02519 (OPEN DH21, 23)	DE-ENERGIZED (OPEN DH21, 23)	35
	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	1CVDH13BB			SPURIOUS ACTUATION NOT POSSIBLE	5C

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : FF

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
DHRS	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	1	C	C	FC		C	1CVDH13BE			SPURIOUS ACTUATION NOT POSSIBLE	5C
											C5717			SPURIOUS ACTUATION NOT POSSIBLE	5C
											C5762C			SPURIOUS ACTUATION NOT POSSIBLE	5C
	DH14B	DH CLR 1 OUT VLV	SOV	AB	1	O	O	FO		C	1CVDH14BB			SPURIOUS ACTUATION NOT POSSIBLE	5C
											1CVDH14BE			SPURIOUS ACTUATION NOT POSSIBLE	5C
											C5717			SPURIOUS ACTUATION NOT POSSIBLE	5C
											C5762C			SPURIOUS ACTUATION NOT POSSIBLE	5C
	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	1	C	O/C	AS IS		C	1CBE1126C		OP-02519 (OPEN DH1517)	OP-02519 (OPEN DH1517)	36
											C5704		OP-02519 (OPEN DH1517)	OP-02519 (OPEN DH1517)	36
	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	1	O	O/C	AS IS		C	1CBE1121C		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
											1CBE1121H		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
											C5717		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
											C5762C		OP-02519 (CLOSE DH2733)	OP-02519 (CLOSE DH2733)	37
	DH2735	DH AUX SPRAY STOP VLV	MOV	D	1/2	C	C	AS IS		B C	1CBE1155F			SPURIOUS OPEN NOT CREDIBLE	38
											C5705			SPURIOUS OPEN NOT CREDIBLE	38
	DH2736	DH AUX SPRAY THRTL VLV	MOV	A	1/2	C	C	AS IS		B C	2CBF1125F			SPURIOUS OPEN NOT CREDIBLE	38
											C5705			SPURIOUS OPEN NOT CREDIBLE	38
	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	1	C	C	AS IS		C	1CBE1187F		OP-02519 (VERIFY DH64 CLOSED)	OP-02519 (VERIFY DH64 CLOSED)	39
											C5716		OP-02519 (VERIFY DH64 CLOSED)	OP-02519 (VERIFY DH64 CLOSED)	39
	P42-1	DHR/LPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		C	1CAC112B		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											1CAC112C		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											1CAC112F		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											C5716		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
											C5762C		OP-02519 (REGAIN LOCAL CONTROL)	OP-02519 (REGAIN LOCAL CONTROL)	31,40
	P42-2	DHR/LPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		C	2CAD112B		OP-02519 (TRIP P42-2)	OP-02519 (TRIP P42-2)	31
											2CAD112C		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	31
											2CAD112F		OP-02519 (TRIP P42-2)	OP-02519 (TRIP P42-2)	31
											C5616		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	31
											C5755C		OP-02501 (TRIP P42-2)	OP-02501 (TRIP P42-2)	31
EDG	DA1147A/B	EDG 1 AIR START VLV	SOV	K	1	C	O	FC		H	1CGD104B		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
											1CGD104C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
											1CGD104E		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	42
	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	1	FUNC	FUNC	N/A		H	NONE			N/A	
	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	1	O/F	ON	OFF		H	1CGD101L		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD101N		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD103E		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD103F		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD105A		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD106A		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											1CGD111A			OP-02519 (OPERATE LOCALLY)	43
											C5715		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
											C5763C		MOD 84-0183	OP-02519 (OPERATE LOCALLY)	43
	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	
	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	1	O/F	O	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : FF

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
EDG	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	1	OFF	ON	OFF		C	NONE			N/A	
	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	1	O/F	ON	OFF	P205-1	H	NONE			N/A	
	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	2	O/F	ON	OFF	P201-1	H	NONE			N/A	
	P8-1	DO XFER PUMP 1	PUMP	BM	1	O/F	O	OFF	P195-1	H	NONE			N/A	
	S206-01	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-02	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-03	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
	S206-04	EDG 1 AIR START MOTOR	MTR	K	1	OFF	ON	N/A		H	NONE			N/A	
ESSPWR	1N	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	1P	125VDC STATION BATTERY	BATT	Y	1	ON	ON	OFF		H	NONE			N/A	
	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	1/2	ON	ON	OFF	BACKFEED D2	H	BCHBBDA			NOT REQUIRED FOR S/D	7
	C1	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF		H	1CABDC1C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CABDC1L		ECP 05-0105	OP-02519 (TRANSFER LOCALLY)	44
											1CAC101C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC101D		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC1033A		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC1033B		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											1CAC103A		MOD 88-0254	OP-02519 (TRANSFER LOCALLY)	44
											C5715		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
											C5763C		MOD 84-0183	OP-02519 (TRANSFER LOCALLY)	44
	C2	4.16KV AC SWGR	SWGR	S	1	ON	ON	OFF	P3-1,-2,-3	H	1CAC110C			NOT REQUIRED FOR S/D	7
											ACAACC2C			NOT REQUIRED FOR S/D	7
											ACAACC2H			NOT REQUIRED FOR S/D	7
											ACAC2031A			NOT REQUIRED FOR S/D	7
											ACAC2032A			NOT REQUIRED FOR S/D	7
											C5715			NOT REQUIRED FOR S/D	7
	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	1	ON	ON	OFF		H	NONE			N/A	
	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR LOCALLY)	OP-02519 (MONITOR LOCALLY)	45
	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	1/2	ON	ON	OFF		H	2CY211A			LOSS OF INDICATION	5A
											2CY211B			LOSS OF INDICATION	5A
											2CY211C			LOSS OF INDICATION	5A
											2CY419A			LOSS OF INDICATION	5A
	C5708	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			LOSS OF INDICATION	5A
	C5709	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112C			LOSS OF INDICATION	5A
	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	1	ON	ON	OFF		H	1CY112A			LOSS OF INDICATION	5A
											1CY112B			LOSS OF INDICATION	5A
											1CY112C			LOSS OF INDICATION	5A
	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	1CY116A			LOSS OF INDICATION	5A

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	C5717	CONT POWER SV IND LIGHTS	PNL	FF	1	ON	ON	OFF		H	2CY212A 2CY212B			LOSS OF INDICATION LOSS OF INDICATION	5A 5A
	C5755C	SFAS POWERED SV CH.2	PNL	FF	2	ON	ON	OFF		H	2CD2P19A			SFAS ACTUATES	31
	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATES	31
	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	2	ON	ON	OFF		H	2CD2P18A 4CY407A			SFAS ACTUATES SFAS ACTUATES	31 31
	C5759C	INST POWER NNI-X BUS	PNL	FF	2	ON	ON	OFF		H	BPYBU51A			OP-02519 (MONITOR NNI'S AT ASP)	46
	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	1	ON	ON	OFF		H	APYAU26A			OP-02519 (MONITOR NNI'S AT ASP)	46
	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	1CY115B 1CYE211A			SFRCS ACTUATES SFRCS ACTUATES	47 47
	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	1	ON	ON	OFF		H	1CY121A 1CY121B 1PD1P11A			SFRCS ACTUATES SFRCS ACTUATES SFRCS ACTUATES	47 47 47
	C5762C	SFAS POWERED SV CH.1	PNL	FF	1	ON	ON	OFF		H	1CD1P18A			SFAS ACTUATES	31
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATES	31
	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY106A		MOD 84-0116/OP-02519	OP-02519 (MONITOR FLUX C4808)	48
	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY1A105A			OP-02519 (MONITOR NNI'S AT ASP)	46
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CD1P19A 3CY307A			SFAS ACTUATES SFAS ACTUATES	31 31
	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	1/2	ON	ON	OFF		H	2CY215B 2CYF211A			SFRCS ACTUATES SFRCS ACTUATES	47 47
	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	1	ON	ON	OFF		H	1CY107AA 1CY109AA			OP-02519 (MONITOR NNI'S AT ASP) LOSS OF POWER TO RC4608A, B	46 60
	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			NOT REQUIRED FOR S/D	30
	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	1	ON	ON	OFF		H	1CY104A			NOT REQUIRED FOR S/D	30
	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	1	ON	OFF	ON		H	NONE			N/A	
	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	1	ON	ON	OFF		H	NONE			N/A	
	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1N	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1NA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1P	125VDC DIST PNL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	D1PA	125VDC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAN	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DAP	125VDC DIST PANEL	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	
	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	1	FUNC	FUNC	OFF	DBC1P,DBC1N	H	NONE			N/A	
	DC MCC 1	250/125V DC MCC	MCC	Y	1	ON	ON	OFF		H	NONE			N/A	
	E1	480 VAC MCC E1	SWGR	Y	1	ON	ON	OFF		H	1CAC11CED		OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY)	44
											1CAC11CEF			LOSS OF INDICATION ONLY	44
											1CAC12CED		OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY)	44
											1CAC12CEF			LOSS OF INDICATION ONLY	44
											1CBCE11B		OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY)	44
											1CBCE12B		OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY)	44
											C5715		OP-02519 (TRANSFER LOCALLY)	OP-02519 (TRANSFER LOCALLY)	44
	E11A	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11B	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE			N/A	
	E11C	480VAC MCC	MCC	V	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11D	480VAC MCC	MCC	G	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E11E	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	E12A	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12B	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E12C	480VAC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12D	480V AC MCC	MCC	BE	1	ON	ON	OFF		H	NONE			N/A	
	E12E	480VAC MCC	MCC	B	1	ON	ON	OFF		H	NONE			N/A	
	E12F	480VAC MCC	MCC	K	1	ON	ON	OFF		H	NONE			N/A	
	E14	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E15	480VAC MCC	MCC	Y	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16A	480V AC MCC	MCC	EE	1	ON	ON	OFF		H	NONE		MOD 85-0063	N/A	6**
	E16B	480VAC MCC	MCC	DG	1	ON	ON	OFF		H	NONE			N/A	
	F7	480V AC MCC F7	MCC	II	1/2	ON	ON	OFF		H	BCAD2DF7D			NOT REQUIRED FOR S/D	7
											BCAD2DF7F			NOT REQUIRED FOR S/D	7
											BCBDF7B			NOT REQUIRED FOR S/D	7
											BCBF7A			NOT REQUIRED FOR S/D	7
											C5715			NOT REQUIRED FOR S/D	7
	F71	480V AC MCC	MCC	II	1/2	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	RC1761	CONT POWER (WC1747)	PNL	A	1/2	ON	ON	OFF		H	NONE			N/A	
	RC3601	DC CONT POWER RCP MONITOR	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	1	ON	ON	OFF		H	NONE			N/A	
	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	1	ON	ON	OFF		H	NONE			N/A	
	RC3715	CONTROL POWER (SV WC1453)	PNL	U	1	ON	ON	OFF		H	NONE			N/A	
	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	1	ON	ON	OFF		H	NONE			N/A	
	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	1	ON	ON	OFF		H	NONE			N/A	

LEGEND

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SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
ESSPWR	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	1/2	ON	ON	OFF	BACKFEED C2/D2	H	NONE			NOT REQUIRED FOR S/D	7
	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	Y3	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YAU	120VAC DIST PNL	PNL	Y	1	ON	ON	OFF		H	NONE			N/A	
	YE1	120VAC MCC	PNL	K	1	ON	ON	OFF		H	NONE			N/A	
	YE2	240/120VAC MCC	PNL	V	1	ON	ON	OFF		H	NONE			LOS DUE TO LACK OF COORDINATION	67
	YV1	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YV3	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	YVA	125VDC INVERTER	INV	Y	1	ON	ON	OFF		H	NONE			N/A	
	ZC6452	AFP #1 CTRL VLV POSITION CONTROLLER	PNL	E	1	ON	ON	OFF		H	NONE			N/A	
	ZC6459	MDFP CONTROL VLV POSITION CONTROLLER	PNL	II	1	ON	ON	OFF		H	NONE			N/A	
HPIS	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02D	H	1CBE1103F			NOT REQUIRED FOR S/D	11
											1CBE1103G			NOT REQUIRED FOR S/D	11
											C5716			NOT REQUIRED FOR S/D	11
											C5763C			NOT REQUIRED FOR S/D	11
	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	1	C	O	AS IS	HP02C	H	1CBE1105F			NOT REQUIRED FOR S/D	11
											1CBE1105G			NOT REQUIRED FOR S/D	11
											C5716			NOT REQUIRED FOR S/D	11
											C5763C			NOT REQUIRED FOR S/D	11
	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	1	O	O	AS IS		H	1CBE1286F			NOT REQUIRED FOR S/D	11
											C5716			NOT REQUIRED FOR S/D	11
	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	1	OFF	ON	OFF		H	NONE			N/A	
	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	1	OFF	ON	OFF	P197-1	H	NONE			N/A	
	P58-1	HPI PUMP 1	PUMP	AB	1	OFF	O/F	OFF		H	1CAC111B		OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1)	11,31
											1CAC111C		OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1)	11,31
											1CAC111F		OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1)	11,31
											C5716		OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1)	11,31
											C5763C		OP-02519 (TRIP P58-1)	OP-02519 (TRIP P58-1)	11,31
	P58-2	HPI PUMP 2	PUMP	A	2	OFF	O/F	OFF		H	2CAD111B		OP-02519 (TRIP P58-2)	OP-02519 (TRIP P58-2)	31
											2CAD111C		OP-02519 (TRIP P58-2)	OP-02519 (TRIP P58-2)	31
											2CAD111F		OP-02519 (TRIP P58-2)	OP-02519 (TRIP P58-2)	31
											C5756C		OP-02519 (TRIP P58-2)	OP-02519 (TRIP P58-2)	31
HVAC	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	1	O/F	O/F	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	C25-1	EDG RM 1 VENT FAN 1	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	
	C25-2	EDG RM 1 VENT FAN 2	FAN	K	1	O/F	ON	OFF		H	NONE			N/A	

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
HVAC	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C73-1	AFP RM VENT FAN 1	FAN	E	1	O/F	ON	OFF		H	NONE			N/A	
	C78-1	BATT RM VENT FAN 1	FAN	Y	1	O/F	ON	OFF		H	NONE			N/A	
	C99-1	SW PMP RM EXH FAN 1	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	C99-2	SW PMP RM EXH FAN 2	FAN	BF	1	O/F	ON	OFF		H	NONE			N/A	
	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	1	O/C	O/C	OPEN		H	NONE			N/A	
	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305B	H	NONE			N/A	
	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	1	O/C	O	AS IS	HV5305A	H	NONE			N/A	
	HV5329A	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5329B	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FO		H	NONE			N/A	
	HV5329C	EDG RM 1 DAMPER	DMPR	K	1	O/C	O	FC		H	NONE			N/A	
	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	1	O/C	O	AS IS		H	NONE			N/A	
MSS	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	1	C	O/C	FC		H	1CVCS11BC		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											1CVCS11BE		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											C5717		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											C5762A		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
											C5763D		OP-02519 (THROTTLE ICS11B)	OP-02519 (THROTTLE ICS11B)	50
	MS100	MSL 2 ISO VLV	SOV	DH	2	O	C	FC		H	1CFV100DH		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											1CFV100DJ		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											1CFV100EG		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											1CFV100EH		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CFV100AE		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CFV100B		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CFV100BG		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CRSCC12A		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CRSCC14A		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											C5762A		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											C5792		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	2	C	C	FC		H	2CRSCC12A			SPURIOUS OPENING NOT POSSIBLE	5C
											2CRSCC14A			SPURIOUS OPENING NOT POSSIBLE	5C
											2CV1001C			SPURIOUS OPENING NOT POSSIBLE	5C
											2CV1001F			SPURIOUS OPENING NOT POSSIBLE	5C
											C5717			SPURIOUS OPENING NOT POSSIBLE	5C
											C5792			SPURIOUS OPENING NOT POSSIBLE	5C
	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	1CFV101AE		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV101B		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CFV101BG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CRSCC11A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											1CRSCC13A		OP-02519 (CLOSE MSIV's)	OP-02519 (CLOSE MSIV's)	51
											2CFV101DH		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV101DJ		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV101EG		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											2CFV101EH		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MSS	MS101	MSL 1 ISO VLV	SOV	DH	1	O	C	FC		H	C5708		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											C5762A		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											C5792		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
											C5792N		OP-02519 (CLOSE MSIVs)	OP-02519 (CLOSE MSIVs)	51
	MS101-1	MS1V 1 WU ISO VLV	SOV	DH	1	C	C	FC		H	1CRSCC11A			SPURIOUS OPENING NOT POSSIBLE	5C
											1CRSCC13A			SPURIOUS OPENING NOT POSSIBLE	5C
											1CV1011C			SPURIOUS OPENING NOT POSSIBLE	5C
											1CV1011F			SPURIOUS OPENING NOT POSSIBLE	5C
											C5717			SPURIOUS OPENING NOT POSSIBLE	5C
											C5762A			SPURIOUS OPENING NOT POSSIBLE	5C
	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	1	C	C/O	FC	ICS11A	H	NONE			N/A	
MUPS	HP1556	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02519 (OPEN HP1556)	OP-02519 (OPEN HP1556)	52
	HP26	HPI TO RCP SEALS	MAN	AB	1	C	O	AS IS		H	NONE			NOT REQUIRED FOR S/D	7
	HP29	MU RECIRC TO BWST	MAN	AB	1/2	C	O	AS IS	HPI TRAIN 1&2	H	NONE		OP-02519 (OPEN HP29)	OP-02519 (OPEN HP29)	52
	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1237F	CC1409	OP-02519 (OPEN MU01A)	OP-02519 (OPEN MU01A)	10,71
											2CBF1237K	CC1409	OP-02519 (OPEN MU01A)	OP-02519 (OPEN MU01A)	10,71
											C5703	MU01A	OP-02519 (OPEN MU01A)	OP-02519 (OPEN MU01A)	10,71
	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	1/2	O/C	O/C	AS IS	MU02B,2A,MU03	H	2CBF1238F	CC1410		OP-02519 (OPEN MU01A)	71
											2CBF1238K	CC1410		OP-02519 (OPEN MU01A)	71
											C5703	MU01A		OP-02519 (OPEN MU01A)	71
	MU02A	LETDOWN CLR OUT VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1171F		OP-02519 (OPEN MU02A)	OP-02519 (OPEN MU02A)	10,31
											1CBE1171G		OP-02519 (OPEN MU02A)	OP-02519 (OPEN MU02A)	10,31
											C5717		OP-02519 (OPEN MU02A)	OP-02519 (OPEN MU02A)	10,31
											C5763C		OP-02519 (OPEN MU02A)	OP-02519 (OPEN MU02A)	10,31
	MU02B	LETDOWN CLR IN VLV	MOV	D	1/2	O	O/C	AS IS		H	1CBE1172F		OP-02519 (OPEN MU02B)	OP-02519 (OPEN MU02B)	10,41
											C5703	MU01A	OP-02519 (OPEN MU02B)	OP-02519 (OPEN MU02B)	10,41
	MU03	RC LETDOWN ISO VLV	SOV	AB	1/2	O	O/C	FC		H	2CSF1744A		OP-02519 (CLOSE/OPEN MU03)	OP-02519 (CLOSE/OPEN MU03)	10,31
											2CVMU03C		OP-02519 (CLOSE/OPEN MU03)	OP-02519 (CLOSE/OPEN MU03)	10,31
											2CVMU03E		OP-02519 (CLOSE/OPEN MU03)	OP-02519 (CLOSE/OPEN MU03)	10,31
											C5715		OP-02519 (CLOSE/OPEN MU03)	OP-02519 (CLOSE/OPEN MU03)	10,31
	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	1/2	O	O	AS IS		H	ACBE2259C		OP-02519 (OPEN MU04)	OP-02519 (OPEN MU04)	10,68
											C5703	MU01A	OP-02519 (OPEN MU04)	OP-02519 (OPEN MU04)	10,68
	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10B	H	ACBE2262C		OP-02519 (OPEN MU10A)	OP-02519 (OPEN MU10A)	10,53
											C5703	MU01A	OP-02519 (OPEN MU10A)	OP-02519 (OPEN MU10A)	10,53

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2263C			NOT REQUIRED FOR S/D	7
											C5703	MU01A		NOT REQUIRED FOR S/D	7
	MU11	RC LETDOWN DIVERTING VLV	MOV	G	1/2	O	C	AS IS		H	ACBE2278C		OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											ACBE2278I	FYIC-MU39	OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											ACBE2278J	86/FB	OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											ACBE2278L		OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											C5702		OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											C5759C		OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
											C5761B		OP-02519 (ALIGN MU11 TO CWRT)	OP-02519 (ALIGN MU11 TO CWRT)	10,53
	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	1/2	O	C	N/A		H	NONE		OP-02519 (CLOSE MU182)	OP-02519 (CLOSE MU182)	10,53
	MU19	SEAL INJ INLET ISO VLV	SOV	AB	1/2	O	O	FO		H	BCNNI261C			OP-02519 (OPERATE MU214 & MU216)	10,53
											BCNNI264A			OP-02519 (OPERATE MU214 & MU216)	10,53
											BLNNI261D			OP-02519 (OPERATE MU214 & MU216)	10,53
											BLNNI264B			OP-02519 (OPERATE MU214 & MU216)	10,53
											C5759C			OP-02519 (OPREATE MU214 & MU216)	10,53
	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	1/2	O/C	O	AS IS	MU10A	H	ACBE2271C			NOT REQUIRED FOR S/D	7
											C5703	MU01A		NOT REQUIRED FOR S/D	7
	MU206	Recirc to Seal Return Stop Valve	MAN	AB	1	O	O/C	AS IS		H	NONE		OP-02501(CLOSE MU206)	OP-02501(CLOSE MU206)	52
	MU208	HPI TO RCP SEALS	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN MU208)	OP-02519 (OPEN MU208)	52
	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	1/2	O	C	AS IS		H	NONE		OP-02501 (CLOSE MU214)	OP-02501 (CLOSE MU214)	16
	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	1/2	C	O	AS IS		H	NONE		OP-02501 (THROTTLE MU216)	OP-02501 (THROTTLE MU216)	16
	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	1/2	O/C	O/C	FC		B H	2CVMU38C		OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38)	10,31
											2CVMU38D		OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38)	10,31
											2CVMU38E		OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38)	10,31
											C5717		OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38)	10,31
											C5756D		OP-02519 (OPEN MU38)	OP-02519 (OPEN MU38)	10,31
	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1174F	2/TDC	OP-02519 (OPEN MU59A)	OP-02519 (OPEN MU59A)	10,31
											1CBE1174G	KA,KB	OP-02519 (OPEN MU59A)	OP-02519 (OPEN MU59A)	10,31
											C5717		OP-02519 (OPEN MU59A)	OP-02519 (OPEN MU59A)	10,31
											C5763D		OP-02519 (OPEN MU59A)	OP-02519 (OPEN MU59A)	10,31
	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1175F		OP-02519 (OPEN MU59B)	OP-02519 (OPEN MU59B)	10,31
											1CBE1175G	KA,KB	OP-02519 (OPEN MU59B)	OP-02519 (OPEN MU59B)	10,31
											C5717		OP-02519 (OPEN MU59B)	OP-02519 (OPEN MU59B)	10,31
											C5763D		OP-02519 (OPEN MU59B)	OP-02519 (OPEN MU59B)	10,31
	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1177F		OP-02519 (OPEN MU59C)	OP-02519 (OPEN MU59C)	10,31
											1CBE1177G	KA,KB	OP-02519 (OPEN MU59C)	OP-02519 (OPEN MU59C)	10,31
											C5717		OP-02519 (OPEN MU59C)	OP-02519 (OPEN MU59C)	10,31
											C5763D		OP-02519 (OPEN MU59C)	OP-02519 (OPEN MU59C)	10,31
	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	1/2	O	O	AS IS		H	1CBE1178F		OP-02519 (OPEN MU59D)	OP-02519 (OPEN MU59D)	10,31
											1CBE1178G	KA,KB	OP-02519 (OPEN MU59D)	OP-02519 (OPEN MU59D)	10,31
											C5717		OP-02519 (OPEN MU59D)	OP-02519 (OPEN MU59D)	10,31
											C5763D		OP-02519 (OPEN MU59D)	OP-02519 (OPEN MU59D)	10,31
	MU6405	RC MU PUMP SUCT VLV	MOV	AB	1	C	O/C	AS IS	HPIS TRAIN 1	H	1CBE1127A		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											ACHILOWAA		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											ACHILOWAB		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											ACHILOWAC		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											C5703	MU01A	OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											C5759C		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53
											C5760D		OP-02519 (ALIGN MU6405 TO BWST)	OP-02519 (ALIGN MU6405 TO BWST)	10,53

LEGEND

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Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	MU6407	MU RECIRC ISO VLV	AOV	AB	1	O	O/C	FO	HPIS TRAIN 1	H	1CV6407C		OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
											C5703	MU01A	OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
											C5706/10		OP-02519 (OPEN MU6407)	OP-02519 (OPEN MU6407)	10,53
	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1208A		OP-02519(OPEN MU6408)	OP-02519(OPEN MU6408)	53
											C5703	MU01A	OP-02519(OPEN MU6408)	OP-02519(OPEN MU6408)	53
	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	1	O	O	AS IS	HPIS TRAIN 1	H	1CBE1147A		OP-02519 (OPEN MU6409)	OP-02519 (OPEN MU6409)	10,53
											C5703	MU01A	OP-02519 (OPEN MU6409)	OP-02519 (OPEN MU6409)	10,53
	MU6419	MU DISCH VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	1CBE1295A		OP-02519 (OPEN MU6422)	OP-02519 (OPEN MU6422)	10,53
											C5703	MU01A	OP-02519 (OPEN MU6422)	OP-02519 (OPEN MU6422)	10,53
	MU6420	MU32 BYPASS VLV	MOV	AB	2	C	O	AS IS	HPIS,MU32	H	2CBF1616A		OP-02519(OPEN MU6420)	OP-02519(OPEN MU6420)	53,73
											C5703	MU01A	OP-02519(OPEN MU6420)	OP-02519(OPEN MU6420)	53,73
	MU6421	MU CTMT ISO VLV	MOV	AB	1	C	O	AS IS	HPIS TRAIN 1	H	1CBE1194A		OP-02519 (CLOSE MU6421)	OP-02519 (CLOSE MU6421)	10,53
											1CBE1194H		OP-02519 (CLOSE MU6421)	OP-02519 (CLOSE MU6421)	10,53
											C5717		OP-02519 (CLOSE MU6421)	OP-02519 (CLOSE MU6421)	10,53
	MU6422	MU CTMT ISO VLV	MOV	A	2	O	O	AS IS	HPIS TRAIN 2	H	2CBF1108A		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
											2CBF1108H		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
											C5717		OP-02519(OPEN MU6422)	OP-02519(OPEN MU6422)	53
	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1748A		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											2CVMU66AB		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											2CVMU66AD		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											C5717		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
											C5756D		OP-02519 (OPEN MU66A)	OP-02519 (OPEN MU66A)	10,31
	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1736A	KA,KB	OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											1CVMU66BB	KA,KB	OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											1CVMU66BD		OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											C5717		OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
											C5763C		OP-02519 (OPEN MU66B)	OP-02519 (OPEN MU66B)	10,31
	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	1CSF1737A	KA,KB	OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											1CVMU66CB	KA,KB	OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											1CVMU66CD		OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											C5717		OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
											C5763C		OP-02519 (OPEN MU66C)	OP-02519 (OPEN MU66C)	10,31
	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	1/2	O	O	FC		H	2CSF1749A	KA,KB	OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											2CVMU66DB		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											2CVMU66DD		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											C5717		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
											C5756C		OP-02519 (OPEN MU66D)	OP-02519 (OPEN MU66D)	10,31
	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	1/2	C	O	N/A		H	NONE		OP-02519 (OPEN MU97)	OP-02519 (OPEN MU97)	10,53
	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACBE1191B		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											C5704		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS,P-371B	H	ACD117C			NOT REQUIRED FOR S/D	54
											ACD117I			NOT REQUIRED FOR S/D	54
											C5704			NOT REQUIRED FOR S/D	54
	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACBE1192C		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											C5704		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACAC105B		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											ACAC105C		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											ACAC105L		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
MUPS	P37-1	MU PUMP 1	PUMP	AB	1	O/F	ON	OFF	HPIS TRAIN 1	H	ACAC105M		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
											C5704		OP-02519 (OPERATE LOCALLY)	OP-02519 (OPERATE LOCALLY)	54
	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	1	O/F	O	OFF	P371D	H	NONE			N/A	
	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN WC119)	OP-02519 (OPEN WC119)	10,53
	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	1/2	C	O	AS IS		H	NONE		OP-02519 (OPEN WC120)	OP-02519 (OPEN WC120)	10,53
	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	1/2	O	C	FC		H	ACV1453G		OP-02519 (CLOSE WC1453)	OP-02519 (CLOSE WC1453)	10,53
											C5718		OP-02519 (CLOSE WC1453)	OP-02519 (CLOSE WC1453)	10,53
	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	1/2	O	O	FC		H	ACV1743G		OP-02519 (OPEN WC1743)	OP-02519 (OPEN WC1743)	10,53
											C5718		OP-02519 (OPEN WC1743)	OP-02519 (OPEN WC1743)	10,53
	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	1/2	O	O	FC		H	BCV1747G		OP-02519 (OPEN WC1747)	OP-02519 (OPEN WC1747)	10,53
											C5718		OP-02519 (OPEN WC1747)	OP-02519 (OPEN WC1747)	10,53
	WC3560	DEGASIFIER BYPASS VLV	SOV	G	1/2	C	O	FO		H	ACV3560C		OP-02519 (OPEN WC3560)	OP-02519 (OPEN WC3560)	10,53
											C5718		OP-02519 (OPEN WC3560)	OP-02519 (OPEN WC3560)	10,53
NI	NI-5874A	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LNF5874G			USE NI-5874C	48
											C5799			USE NI-5874C	48
											NI5874A			USE NI-5874C	48
	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	1	ON	ON	OFF	NI-5874A	H	NONE		OP-02519 (MONITOR AT C4808)	OP-02519 (MONITOR AT C4808)	48
	NI-NI2	SOURCE RANGE IND	IND	FF	1	ON	ON	OFF		H	1LRPSB03A			USE NI-5874C	48
											1LRPSB03B			USE NI-5874C	48
											1LRPSB03C			USE NI-5874C	48
											ALNI1201			USE NI-5874C	48
											C5762E			USE NI-5874C	48
											NI-NI2			USE NI-5874C	48
NNI	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU31A			NOT REQUIRED FOR S/D	7
											2LLMU31B			NOT REQUIRED FOR S/D	7
											C5760D			NOT REQUIRED FOR S/D	7
											FI-MU31			NOT REQUIRED FOR S/D	7
	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	2	ON	ON	OFF		H	2LLMU34A			NOT REQUIRED FOR S/D	7
											2LLMU34B			NOT REQUIRED FOR S/D	7
											C5760D			NOT REQUIRED FOR S/D	7
											FI-MU34			NOT REQUIRED FOR S/D	7
	FI6425	RC MU FLOW-HI RANGE	IND	FF	1	ON	ON	OFF		H	1LL6425A			OP-02501 (MONT LI-RC14-1 AT ASP)	55
											1LL6425B			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5702			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5705			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5763A			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											FI6425			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											JY6425			OP-02519 (MONT LI-RC14-1 AT ASP)	55
	FI6435	RC MU FLOW-LOW RANGE	IND	FF	1	ON	ON	OFF		H	1LL6435A			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											1LL6435B			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5702			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5703	MU01A		OP-02519 (MONT LI-RC14-1 AT ASP)	55
											C5763A			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											FI6435			OP-02519 (MONT LI-RC14-1 AT ASP)	55
											JY6435			OP-02519 (MONT LI-RC14-1 AT ASP)	55
	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03CB			NOT REQUIRED FOR S/D	7

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	FYI-HP03C	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	C5716			NOT REQUIRED FOR S/D	7
											FYIHP03C			NOT REQUIRED FOR S/D	7
	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	FYI-HP03D	HPI FLOW INDICATION	IND	FF	1	ON	ON	OFF		H	1LHP03DB			NOT REQUIRED FOR S/D	7
											C5716			NOT REQUIRED FOR S/D	7
											FYIHP03D			NOT REQUIRED FOR S/D	7
	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE			NOT REQUIRED FOR S/D	7
	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	LI-RC14-3	PRZR LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LRC143C			USE LI-RC-14-1	56
											C5705			USE LI-RC-14-1	56
											LI-RC14-3			USE LI-RC-14-1	56
	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	1	ON	ON	OFF		H	1LSP09B3C			USE LI-SP09B3	56
											C5712			USE LI-SP09B3	56
											LI-SP09B1			USE LI-SP09B3	56
	LI-SP09B3	SG1-1 START-UP LEVEL IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11B			USE LI-SP09B3	56
											C5761A			USE LI-SP09B3	56
											LI-SP09B8			USE LI-SP09B3	56
	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT11B			USE LI-SP09B3	56
											1LSGLT11E			USE LI-SP09B3	56
											C5708			USE LI-SP09B3	56
											C5761A			USE LI-SP09B3	56
											LI-SP09B8A			USE LI-SP09B3	56
	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	1	ON	ON	OFF	LI-SP09B1,3	H	1LSGLT31B			USE LI-SP09B3	56
											C5761A			USE LI-SP09B3	56
											LI-SP09B9			USE LI-SP09B3	56
	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	1	ON	ON	OFF		H	1LP6365BD			USE PI-6365B1	56
											1LP6365BE			USE PI-6365B1	56
											C5763A			USE PI-6365B1	56
											C5799			USE PI-6365B1	56
											PI6365B			USE PI-6365B1	56
	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	3LSFPT31A			USE PI-6365B1	56
											ALSF1603A			USE PI-6465B1	56
											C5762C			USE PI-6465B1	56
											C5763D			USE PI-6365B1	56
											PI-RC2B3			USE PI-6365B1	56
	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSF1602A			USE PI-6365B1	56
											1LSFPT11A			USE PI-6365B1	56
											C5762C			USE PI-6365B1	56
											PI-RC2B4			USE PI-6365B1	56
	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF		H	1LSP12B1B			USE PI-SP12B1	56
											C5708			USE PI-SP12B1	56
											PI-SP12B			USE PI-SP12B1	56
	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	1	ON	ON	OFF		H	NONE		OP-02519 (MONITOR AT ASP)	OP-02519 (MONITOR AT ASP)	56
	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	BLNNIL09B			USE PI-SP12B1	56

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
NNI	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	1	ON	ON	OFF	PI-SP12B-1	H	BLSP12B2A			USE PI-SP12B1	56
											C5712			USE PI-SP12B1	56
											C5759B			USE PI-SP12B1	56
											C5759C			USE PI-SP12B1	56
											PISP12B2			USE PI-SP12B1	56
	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			OP-02519 (MONITOR IN ROOM 314)	57
	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	NONE		MOD 83-0153/OP-02519	OP-02519 (MONITOR IN ROOM 303)	57
	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	2	ON	ON	OFF		H	NONE			OP-02519 (MONITOR IN ROOM 314)	57
	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	1	ON	ON	OFF		H	ALNNI833B		MOD 83-0153/OP-02519	OP-02519 (MONITOR IN ROOM 303)	57
											C5760D		MOD 83-0153/OP-02519	OP-02519 (MONITOR IN ROOM 303)	57
	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	1	ON	ON	OFF		H	1LRPSB07A			USE TE-RC3B5	57
											1LRPSB07B			USE TE-RC3B5	57
											C5762E			USE TE-RC3B5	57
											TT-RC3B2			USE TE-RC3B5	57
	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	1LTRC3B5B			USE TE-RC3B5	57
											1LTRC3B5C			USE TE-RC3B5	57
											C5763A			USE TE-RC3B5	57
											C5799			USE TE-RC3B5	57
											TI-RC3B5			USE TE-RC3B5	57
											TT-RC3B5			USE TE-RC3B5	57
	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	1	ON	ON	OFF		H	2LTRC3B6B			USE TE-RC3B5	57
											2LTRC3B6C			USE TE-RC3B5	57
											C5755G			USE TE-RC3B5	57
											C5798			USE TE-RC3B5	57
											TI-RC3B6			USE TE-RC3B5	57
											TT-RC3B6			USE TE-RC3B5	57
	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	BLNNI154D			USE TE-RC4B3	57
											C5759D			USE TE-RC4B3	57
											TI-RC4B2			USE TE-RC4B3	57
											TT-RC4B2			USE TE-RC4B3	57
	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	1	ON	ON	OFF		H	ALNNI833C			USE TE-RC4B3	57
											C5760D			USE TE-RC4B3	57
											TI-RC4B4			USE TE-RC4B3	57
											TT-RC4B4			USE TE-RC4B3	57
RCS	RC11	PORV BLOCK VLV	MOV	D	1	O	O/C	AS IS		H/L H	1CBE1602K		OP-02519 (CLOSE RC11)	OP-02519 (CLOSE RC11)	58
											C5705		OP-02519 (CLOSE RC11)	OP-02519 (CLOSE RC11)	58
	RC13B	RCS CODE SAFETY VALVE	SV	D	1	C	C	CLOSED		H	NONE			N/A	
	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	1/2	O	C	AS IS	RC200	B H	NONE		OP-02501 (CLOSE RC147)	OP-02501 (CLOSE RC147)	59
	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	2	C	O/C	AS IS		H/L H	2CBF1285G		MOD 84-0185	OP-02519 (CLOSE RC147)	59
											C5798		MOD 84-0185	OP-02519 (CLOSE RC147)	59
	RC239A	PZR VAPOR SMPL VLV	MOV	D	2	C	O/C	AS IS	RC200	H/L H	2CBF1126F			OP-02519 (CLOSE RC147)	59
											2CBF1126G			OP-02519 (CLOSE RC147)	59
											C5705			OP-02519 (CLOSE RC147)	59
	RC239B	PZR LIQUID SMPL VLV	MOV	D	2	C	C	AS IS	RC200	H/L H	2CBF1127F			OP-02519 (CLOSE RC147)	59
											C5705			OP-02519 (CLOSE RC147)	59
	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2L			USE RC11	58

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS

FIRE AREA : FF

TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
RCS	RC2A	PZR PORV	SOV	D	2	C	O/C	FC		H/L H	2CVRC2M BCVRC2H BCVRC2P C5705 C5759B			USE RC11 USE RC11 USE RC11 USE RC11 USE RC11	58 58 58 58 58
	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608B	H/L H	1CV4608AC 1CV4608AD C5799			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60 60
	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	1	C	C	FC	RC4608A	H/L H	1CV4608BC C5799			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60
	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610B	H/L H	2CV4610AC 2CV4610AD C5798			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60 60
	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	2	C	C	FC	RC4610A	H/L H	2CV4610BC C5798			SPURIOUS ACTUATION NOT POSSIBLE SPURIOUS ACTUATION NOT POSSIBLE	60 60
	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	2	C	C	FC	RC200	H/L H	2CV4632D 2CV4632F C5705			OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147) OP-02519 (CLOSE RC147)	59 59 59
SFAS	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	2CY207A			SFAS ACTUATED	31
	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	1CY107A			SFAS ACTUATED	31
	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	3CY307A			SFAS ACTUATED	31
	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	1/2	OFF	OFF	OFF		H	4CY407A			SFAS ACTUATED	31
	HIS6453	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	1CLY6453A 1CLY6453B			SFAS ACTUATED SFAS ACTUATED	31 31
	HIS6454	SG Auto Essen Level Control	HIS	A	1/2	OFF	OFF	OFF		H	2CLY6454A 2CLY6454B			SFAS ACTUATED SFAS ACTUATED	31 31
	LI1525A	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	LI1525B	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	LI1525C	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31
	LI1525D	BWST Level Indicator	LI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	LSL1525A1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	ALSF5811A			SFAS ACTUATED	31
	LSL1525B1	BWST Level Switch	LSL	FF	1/2	OFF	OFF	OFF		H	BLSF5821A			SFAS ACTUATED	31
	LT1525A	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	1LSFLT11A			SFAS ACTUATED	31
	LT1525B	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	2LSFLT21A			SFAS ACTUATED	31
	LT1525C	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	3LSFLT31A			SFAS ACTUATED	31
	LT1525D	BWST Level Transmitter	LT	AC	1/2	OFF	OFF	OFF		H	4LSFLT41A			SFAS ACTUATED	31
	PI2000	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	PI2001	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	PI2002	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFAS	PI2003	CTMT Vessel Press Indicator	PI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	PSH2000B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	ALSF5812A			SFAS ACTUATED	31
	PSH2001B	CTMT Vessel Press Switch	PSH	FF	1/2	OFF	OFF	OFF		H	BLSF5822A			SFAS ACTUATED	31
	PT2000	CTMT Vessel Press Xmtr	PT	V	1/2	OFF	OFF	OFF		H	1LSFPT12A			SFAS ACTUATED	31
	PT2001	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	2LSFPT22A			SFAS ACTUATED	31
	PT2002	CTMT Vessel Press Xmtr	PT	EE	1/2	OFF	OFF	OFF		H	3LSFPT32A			SFAS ACTUATED	31
	PT2003	CTMT Vessel Press Xmtr	PT	CC	1/2	OFF	OFF	OFF		H	4LSFPT42A			SFAS ACTUATED	31
	RI2004	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	ALSF1601A			SFAS ACTUATED	31
	RI2005	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	BLSF1651A			SFAS ACTUATED	31
	RI2006	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	ALSF1603A			SFAS ACTUATED	31
	RI2007	CTMT Vessel Radiation Ind	RI	FF	1/2	OFF	OFF	OFF		H	BLSF1653A			SFAS ACTUATED	31
	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	1/2	OFF	OFF	OFF		H	ALSF5813A			SFAS ACTUATED	31
	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	1/2	OFF	OFF	OFF		H	BLSF5823A			SFAS ACTUATED	31
SFRCS	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	2CRC2121A 2CRC2121B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	2CRC2141A 2CRC2141B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	1CRC2111A 1CRC2111B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	1/2	ON	ON	OFF		H	1CRC2131A 1CRC2131B			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC21A 1CRSCC23A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC21A 1CRSCC23A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	1	OFF	OFF	ON		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS6401	CH 1/3 MANUAL START AFPT-1 C5707	HIS	FF	1	OFF	ON	OFF		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	HIS6403	CH 1/3 MAN STRT AFPT-1 & ISOL SG-1 C57	HIS	FF	1	OFF	ON	OFF		H	1CRSCC11A 1CRSCC13A			SFRCS ACTUATED SFRCS ACTUATED	47 47
	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11A			SFRCS ACTUATED	47
	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31A			SFRCS ACTUATED	47
	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21A			SFRCS ACTUATED	47
	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41A			SFRCS ACTUATED	47
	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT21B			SFRCS ACTUATED	47

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	DESCRIPTION	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SFRCS	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	2LSGLT41B			SFRCS ACTUATED	47
	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT11B			SFRCS ACTUATED	47
	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	1/2	ON	ON	OFF		H	1LSGLT31B			SFRCS ACTUATED	47
	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD21B			SFRCS ACTUATED	47
	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	2CRCPD41B			SFRCS ACTUATED	47
	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD11C 1CRCPD11D			SFRCS ACTUATED SFRCS ACTUATED	47 47
	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	1/2	C	C	OPEN		H	1CRCPD31C			SFRCS ACTUATED	47
	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD11B 1CRCPD11E			SFRCS ACTUATED SFRCS ACTUATED	47 47
	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	1CRCPD31B			SFRCS ACTUATED	47
	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD21C			SFRCS ACTUATED	47
	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	1/2	C	C	OPEN		H	2CRCPD41C			SFRCS ACTUATED	47
	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS21L			SFRCS ACTUATED	47
	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	2CRCPS41L			SFRCS ACTUATED	47
	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS11L			SFRCS ACTUATED	47
	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	1/2	C	C	OPEN		H	1CRCPS31L			SFRCS ACTUATED	47
	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM11B 1CRCPM11C			SFRCS INITIATION ON LOOP SFRCS INITIATION ON LOOP	47 47
	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM21B			SFRCS INITIATION ON LOOP	47
	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	1CRCPM31B			SFRCS INITIATION ON LOOP	47
	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	1/2	C	C	OPEN		H	2CRCPM41B			SFRCS INITIATION ON LOOP	47

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	P180	BACKUP SW PUMP	PUMP	BD	1/2	OFF	ON	OFF	SWS TRAIN 1&2	H	ACAC201B			NOT REQUIRED FOR S/D	7
											ACAC201C			NOT REQUIRED FOR S/D	7
											C5720			NOT REQUIRED FOR S/D	7
	P3-1	SW PUMP 1	PUMP	BF	1	O/F	ON	OFF		H	1CAC107B		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC107C		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC107F		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											C5716		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											C5763C		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
	P3-3	SW PUMP 3	PUMP	BF	1/2	O/F	ON	OFF	P3-1,P3-2	H	1CAC109B		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109C		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109D		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CAC109G		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											1CACD4E		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											C5715		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											C5716		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
											C5763D		OP-02519 (XFER TO LOCAL CONTROL)	OP-02519 (XFER TO LOCAL CONTROL)	61
	SW1356	CAC 1 OUT ISO VLV	SOV	A	1	O/C	O	FO		H	1CV1356D		OP-02519 (OPEN SW1356)	OP-02519 (OPEN SW1356)	62
											C5716		OP-02519 (OPEN SW1356)	OP-02519 (OPEN SW1356)	62
	SW1358	CAC 3 OUT ISO VLV	SOV	A	1/2	O/C	O	FO		H	1CV1358AI			SW325 REMAINS CLOSED	72
											1CV1358AK			SW325 REMAINS CLOSED	72
											1CV1358AL			SW325 REMAINS CLOSED	72
											C5716			SW325 REMAINS CLOSED	72
	SW1366	CAC 1 IN ISO VLV	MOV	A	1	O	O	AS IS		H	1CBE1142F		OP-02519 (OPEN SW1366)	OP-02519 (OPEN SW1366)	62
											C5716		OP-02519 (OPEN SW1366)	OP-02519 (OPEN SW1366)	62
	SW1368	CAC 3 IN ISO VLV	MOV	A	1/2	O	O	AS IS		H	1CBE1207E			SW325 REMAINS CLOSED	72
											2CBF1224E			SW325 REMAINS CLOSED	72
											C5716			SW325 REMAINS CLOSED	72
	SW1382	AFP 1 SUCT VLV FROM SW	MOV	E	1	C	O/C	AS IS		C	1CBE1218F		OP-02519 (XFER CONTROL TO ASP)	OP-02519 (XFER CONTRL TO ASP)	63
											C5706		OP-02519 (XFER CONTROL TO ASP)	OP-02519 (XFER CONTROL TO ASP)	63
	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	1	O/C	C	AS IS		H	1CBE1277E		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
											1CBE1277G		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
											C5717		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
											C5763C		OP-02519 (CLOSE SW54,55,56)	OP-02519 (CLOSE SW54,55,56)	64
	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	1	O/C	O	FO		H	1CV1424D		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
											1CV1424G		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
											C5716		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
											C5763D		MOD 87-1315	SPURIOUS CLOSURE NOT POSSIBLE	70
	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	1/2	O/C	O	FO		H	1CV1429B			NOT REQUIRED FOR S/D	7
											1CV1429C			NOT REQUIRED FOR S/D	7
											C5716			NOT REQUIRED FOR S/D	7
											C5756D			NOT REQUIRED FOR S/D	7
											C5763D			NOT REQUIRED FOR S/D	7
	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	1	C	O	AS IS		H	1CBE1232F			NOT REQUIRED FOR S/D	30
											C5720			NOT REQUIRED FOR S/D	30
	SW2929	SW TO INT STRU VLV	MOV	BG	1	O/C	O	AS IS	SW2930,31,32	H	1CBE1281F			ONE VALVE NO AND DEPOWERED	65
											C5720			ONE VALVE NO AND DEPOWERED	65
	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	1	O/C	O	AS IS	SW2929,30,32	H	1CBE1282F			ONE VALVE NO AND DEPOWERED	65
											C5720			ONE VALVE NO AND DEPOWERED	65
	SW54	TPCW HX1 OUTLET	MAN	II	1	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

Detailed Analysis

SAFE SHUTDOWN ANALYSIS
FIRE AREA : FF
TRAIN 1 IS ACCREDITED FOR SHUTDOWN

SYSTEM	COMPONENT	D E S C R I P T I O N	TYPE	LOC	TRN	NORM MODE	SHUT MODE	FAIL MODE	BACK UP FOR	COMPON INFO	CIRCUIT	INTERLOCK	REQUIRED CHANGE	JUSTIFICATION	NOTES
SWS	SW55	TPCW HX2 OUTLET	MAN	II	2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64
	SW56	TPCW HX3 OUTLET	MAN	II	1/2	O	C	N/A	SW1395, SW1399	B H	NONE		OP-02519(CLOSE SW54,55,56)	OP-02519(CLOSE SW54,55,56)	64
ASSCKT	C5763F	RPS-3 CABINET									3CY308A			LSOT DUE TO BREAKER COORDINATION	69
ASSCKT	C5784C	ARTS CABINET									3CY312A			LOST DUE TO BREAKER COORDINATION	69
ASSCKT	C5760A	CTRM CABINET									3CY313A			LOST DUE TO BREAKER COORDINATION	69
ASSCKT	Y3VM	VOLTMETER AT C5715									ACY3VMA			LOST DUE TO BREAKER COORDINATION	69

LEGEND

H - required for hot standby C - required for cold shutdown H/L - High/Low interface B - valve maintains boundary isolation N/A - not affected

FIRE AREA FF TABLE 1 NOTES

1. 1-hour fire wrap provided with room detection and suppression. An asterisk indicates the circuit is embedded and adequate separation exists with detection and suppression or low combustible loadings.

2. 20 ft. horizontal separation between redundant trains with suppression, detection, and no significant intervening combustibles or fire hazards, or separation by an equivalent distance around a fire retardant barrier.

3. 3-hour fire wrap provided (or a radiant energy shield inside Containment, as noted).

4. 20 ft. separation, detection and room suppression.

5. The circuit is not required for Safe Shutdown for one of the following reasons:

   a. The circuit provides indicating lights only.

   b. The normal, failed, and desired SSD positions of the component are the same; spurious operation of three-phase power circuits is incredible.

   c. The solenoid/relay and isolating contact(s) is (are) outside the fire area and spurious operation due to a hot short on one side of the circuit and a simultaneous ground on the other is considered incredible.

   d. The power supply is not needed for Safe Shutdown to operate the component.

   e. Failure of the low level instrument cable will not prevent SSD (e.g. SFAS analog inputs, SFRCS pressure switches, AFW modulating valve digital signals; the minimum requirements of NRC lEN 84-09 are met).

      (This note is not referenced for control circuits susceptible to maloperation due to a single short, open, or ground or for power and control circuits for High/Low Pressure Interface valves).

6. Associated circuit coordination exists, see Appendix C-3. An asterisk indicates that it is assumed that the Associated Circuits related to MOV's are considered to have no impact since they are not expected to be in operation. Spurious operation of the valve coincident with a short on the power cable is not considered credible.

   A double asterisk indicates High Impedance Ground Fault protection for the 480V AC Switchgear (E1 & F1) and Motor Control Centers (supplied from E1 & F1) which will prevent up-stream breakers from tripping on a ground.

E11A	E12A	E15	F11A	F12B	F15
E11C	E12B	E16A	F11C	F12C	F16A
E11D	E14		F12A	F14	

7. This backup component is not needed for SSD in this fire area.

8. NOT USED

FIRE AREA FF TABLE 1 NOTES

9. NOT USED

10. RCP Seal Integrity is maintained by re-establishing Seal Return, Seal Injection and Letdown. Inventory Control will be maintained using Makeup Train 1 and Letdown.

11. MUPS is assured for SSD. Therefore, this component is not needed for SSD.

12. The AFW Pump 1 Discharge to SG2 Valve AF3869 is normally closed. This valve could spuriously open and may not be able to be manually closed (Ref. 2.7.F) thereby supplying Feedwater to SG2. The AFW Pump capacity is sufficient to provide flow to both SG's. However, to avoid overfilling SG2 which is not utilized for Shutdown in this area, AF599 needs to be closed.

13. The AFW Pump 1 Discharge to SG1 Valve AF3870 is normally open and required to be open for Safe Shutdown. This valve could spuriously close thereby stopping flow to SG1. Therefore, Trip Breaker D107 at D1PA and open AF3870.

14. The AFW Pump 2 Discharge to SG1 Valve AF3871 is normally closed. This valve could spuriously open. AFW Pump 2 Discharge to SG2 Valve AF3872 is normally open and AFPT 2 P14-2 could start on SFRCS actuation. In order to avoid overfilling either steam generator, trip the throttle valve on AFPT 2.

15. The AFW to SG 1 Isolation Valve AF608 is normally open and required to be open for Safe Shutdown. The Control Circuit is normally isolated by a separate control switch in the Control Room. A review of the circuits shows, with the circuit isolated, spurious closure would require two hot shorts which is not considered credible. Therefore, no actions are required.

16. The AFWP 1 Flow Control Valve AF6452 is open and required to modulate for Safe Shutdown. A review of the circuit in this fire area shows that the potential exists for loss of control to this valve. Therefore, fail open this valve by depowering the valve at D1P breaker and use ICS038B via manual control at the ASP to control SG 1 level. A review of the circuit for AFPT 1 Governor Control Valve ICS038B shows that manual control of ICS038B can be regained at the ASP.

17. The AFPT Main Steam Inlet Valve MS106 is normally closed and is required to be open for Safe Shutdown. A review of the circuit in the fire area shows that a fire in this area could prevent the opening of or spuriously close MS106. Therefore, open Breaker D135 at D1NA and open MS106.

18. The AFPT 1-2 Main Steam Cross-Connect Valve MS107A is normally open to provide a steam supply to AFPT 1-2 for a fire in this area. No credit is taken for AFPT 1-2 and the steam output from SG1-1 is such that the capacity is sufficient to run the AFW Pump Turbine 1-1 even with flow through MS107A. During cooldown at lower temperatures, the flow diversion could effect AFP Pump 1 capacity. With the throttle valve for AFPT 1-2 tripped, steam flow by MS107A will be insignificant. Therefore, no action is required.

    The AFPT 1-1 Main Steam Cross-Connect Valve MS106A is normally open to provide a steam supply to AFPT 1-1 for a fire in this area. No credit is taken for SG 2, since any

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steam from SG 2 to AFPT 1-1 will not affect the operation of AFPT 1-1 AFPT 1-2 is tripped to prevent overfilling SG 2. Therefore, no action is required.

19. The AFWP Turbine 1 Steam Admission Valve MS5889A is an air-operated valve which is normally closed and required to be open for Safe Shutdown. Review of the circuit indicates a hot short can prevent the valve from opening. Fail open the valve by isolating and venting the air off the valve.

20. Containment Air Cooler Fan C1-1 is required for Safe Shutdown. A review of the circuit indicates that the potential exists for loss of control as well as spurious stopping of Fan C1-1, for a fire in this area. The control circuits can be isolated by manually placing the disconnect switch in Cabinet CDE12A-1 in the LOCAL position. CAC Fan C1-1 can be manually started in slow speed by placing the control switch on the BE1401 door in the SLOW position.

21. A review of the circuits shows that spurious operation (either open or closed) and loss of control is possible. RCS Inventory control is maintained by a controlled plant cooldown if letdown is not available. Although RCP seal injection and letdown are not required for safe shutdown, they are detailed in the FHAR because availability of these systems simplifies safe shutdown and results in enhanced plant control. For restoring Letdown, trip breaker and open CC1409.

22. The CCW Inlet Isolation Valves CC1411A, B and Outlet Isolation Valves CC1407A, B are normally open and required to be open for Safe Shutdown to restore Letdown. A review of the circuits shows that spurious closure is possible. For restoring Letdown, trip the respective breakers and open/verify open CC1407A, B, and CC1411A, B.

23. The CCW Return Header Valve CC2645 is normally open and required to be open for Safe Shutdown to restore the Seal Return Coolers. A review of the circuits shows that spurious closure is possible. Therefore, open breaker for CC2645 and open/verify open CC2645.

24. The DHR Cooler 1-1 Iso Valve CC1467 is normally closed. This valve fails open on loss of air. However, this valve is required to be closed when CCW is aligned to the Seal Return Coolers and opened for DHRS Cooldown (See Note 26).

25. Not Used

26. The CCW to Nonessential Isolation Valve CC1495 is normally opened and required to be open for Seal Return. A review of the circuits indicates that a hot short may cause this valve to remain open. CC1495 is air-operated and fails closed on loss of air. Manual bypass Valve CC43 will be opened when the DHR coolers are not in service. (NOTE: Verify CC1467 (CC1469) is closed before opening CC43 and that CC42 (manual isolation valve) and CC43 are closed before opening CC1467 (CC1469).

27. The CCW Line 1 Inlet and Return Isolation Valves CC5095 and CC5097 are normally open and required to be open for provide cooling for Letdown Coolers. A review of the circuits indicates that spurious closure is possible. Trip breaker and manually open CC5095 and CC5097.

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28. CCW Pump P43-1 is aligned to CCW Train 1 and is required to be operable for Safe Shutdown. Based on a review of the circuits, control of the pump can be regained locally after operation of Disconnect Switches at C1 Bus.

29. The Core Flood Isolation Valves CF01A, B are normally open and are required to be closed when cooling down before going below 700 psig. A review of the circuits indicates loss of control power to the valves. Breakers BF1120 at F11A and BE1162 at E11B are normally open; manual action may be required to close CF01A and CF01B before going below 700 psig.

30. The Control Room Emergency Ventilation System (CREVS) is required to be operable to maintain Control Room habitability. If CREVS is lost, the operators can evacuate the Control Room for a fire in this area and shut down the plant from outside the Control Room.

31. Shorts, opens, or grounds in SFAS Analog inputs cannot cause a change of state of the SFAS logic channels. All inputs are isolated so hot shorts will not affect the logic. Either a high or low SG level setpoint is adequate for SSD. SFAS actuated components will not change state unless both actuation output channels (Ch 1/3 or Ch 2/4) or the air supply (where needed) is lost. NNI provides SG level indication.

    Due to loss of power to Train 1, (Ch 1/3), Train 2 (Ch 2/4, and loss of SFAS Cabinets, SFAS could actuate. This actuation could operate the following components:

COMPONENT	DESCRIPTION	EFFECT	ACTION
CS1530,1531	CS Iso Vlv	Open	Stop P56-1
P56-1, 2	CS Pump 1, 2	On	Open Bkr P56-1, 2
P42-2	LPI Pump 2	On	Open Bkr P42-2
P58-1, 2	HPI Pump 1, 2	On	Open Bkr P58-1, 2
CC1411A, B	CCW Inl Iso Vlv	Closed	Open CC1411A, B
CC1407A, B	CCW Out Iso Vlv	Closed	Open CC1407A, B
MU59A	RCP 2-1 Seal Rtn Vlv	Closed	Open MU59A
MU59B	RCP 2-2 Seal Rtn Vlv	Closed	Open MU59B
MU59C	RCP 1-1 Seal Rtn Vlv	Closed	Open MU59C
MU59D	RCP 1-2 Seal Rtn Vlv	Closed	Open MU59D
MU66A	RCP 2-1 Seal Inj Vlv	Closed	Open MU66A
MU66B	RCP 2-2 Seal Inj Vlv	Closed	Open MU66B
MU66C	RCP 1-1 Seal Inj Vlv	Closed	Open MU66C
MU66D	RCP 1-2 Seal Inj Vlv	Closed	Open MU66D
MU02A	RC Lt Dn Cooler Out	Closed	Open MU02A
MU03	RC Lt Dn Cooler Out	Closed	Close then Open MU03
MU38	RCP Seal Rtn Isol	Closed	Open MU38

32. The LPI Line 1 Valve DH01B is normally open and is required to be open for Cold Shutdown. A review of the circuits shows that 3 hot shorts are required to spuriously close the valve. Two of the hot shorts are on the Isolation Switch, while the other hot short is on the Control Switch. This is not a credible event; hence, spurious closure is not possible. However, if required, control and indication can be maintained by

operating the disconnect Switch at CDE-11A, which will provide control and indication at Local Controller.

33. NOT USED

34. To prevent spurious operation, Valves DH09A, DH9B, DH7A, and DH7B are deenergized.

35. The DH Normal Suction Valves DH11 and DH12 are normally closed and depowered during plant operation. A review of the circuits indicates loss of control power is possible. Since the DHR System is only required operable for Cold Shutdown, open Inlet Isolation Valves (DH11, 12) Bypass Valves DH21 and DH23.

36. The Decay Heat Removal (DHR) Suction 1 Valve DH1517 is closed during normal operation but required open for DHR Cold Shutdown. A review of the circuits indicates the Disconnect Switch at CDE-11D will regain local control. Transfer Disconnect Switch to local. (NOTE: DH2733 should be verified closed prior to opening DH1517).

37. The Decay Heat Pump 1 BWST Suction Valves DH2733 is normally open but required to be closed prior to going into DHR Cooldown. A review of the circuits indicates control of the valve may be lost. Therefore, trip Breaker BE1121 at MCC E11A and close DH2733. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator and then manually close the valve. Since this valve is only needed to got to cold shutdown, GL 86-10 allows repairs to be made.

38. DH Auxiliary Spray Stop Valve (DH2735) and Throttle Valve (DH2736) are normally closed and one of them is to be closed when starting DHR Cooldown, to prevent Pressurizer Quenching. A review of the circuits indicates that 2 hot shorts are required for both valves to spuriously open. This is not a credible event. (NOTE: If Aux Spray is required, local control can be regained by transferring the Disconnect Switches (CDE-11B-1 for DH2735 and CDF-11A-2 for DH2736) to local and using Local Switches NVDH2735 and NVDH2736.)

39. The LPI/HPI Crosstie Valve DH64 is normally closed and is required to be closed for DHR cooldown. A review of the circuit indicates spurious opening is possible. Transfer control on CDE-11E to local and verify DH64 is closed prior to using DHR. Due to the torque/limit switches possibly being bypassed by a hot short, the valve operator may be damaged. If this occurs, procedures instruct plant personnel to remove the operator, replace it with a dedicated spare operator and then manually close the valve. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

40. DHR Pump P42-1 is required to be operable for cooldown to Cold Shutdown. A review of the circuit indicated the pump could spuriously start or be made inoperable. However, local control can be regained by transferring the Disconnect Switches to local at C1 and using the local controller to start the pump.

41. Letdown Cooler Inlet Valve MU02B is normally open and is needed open to restore Letdown. A review of the circuits indicates that control power is lost in the Control

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Room, but can be regained locally by transferring the Disconnect Switch to local. Transfer Disconnect Switch on CDE-11B-1 to local and control MU02B at MCC E11B.

42. The EDG 1 Air Start Solenoid Valves DA1147A/B are normally closed and are required to open to provide starting air to the air motors. A review of the circuits indicates the circuits can be disconnected from the Cable Spread Area and Control Room. Redundant fuses are installed to allow repowering. Disconnect and repower the circuits using the Disconnect Switch at C3621 and start diesel locally.

43. Emergency Diesel Generator 1 is normally stopped and is required to run due to Loss of Offsite Power. Disconnect and repower the circuits using the disconnect at C3621. Operate the Diesel locally. Disconnect and redundant fuses are installed to provide isolation at CSR and Control Room.

44. Essential Power supplies C1 and E1 are required to be operable for Safe Shutdown. Switches are installed to allow isolation from CSR and Control Room. The Ammeter circuit for E1 is from a current transformer. A short or open on this circuit will not affect E1 (loss of indication only. Disconnect Control Room circuits by locally operating disconnect switch at C1 and E1.

45. Neutron Flux Monitoring Cabinet (Chi 1) (C4808) is required to provide Source Range Indication for a fire in the Control/Cable Spread Room. Monitor source range indication at C4808 (Room 402).

46. Control Cabinets C5759C, C5760D and C5799 provide power to NNI Instrumentation. However, redundant NNI Instrumentation is available at the Auxiliary Shutdown Panel (C3630).

47. A loss of power to all four reactor coolant pumps will result in actuation of both Trains of the AFWS:

    The steam generator level control and steam generator level indication for the non-accredited train may also be lost.

    Spurious SFRCS signals in the nonaccredited train may result in opening AFWP Discharge Valve to the opposite steam generator (AF3869/AF3871) and/or AFW Flow Control Valve (AF6451/AF6452) which could then open the AFPT Steam Admission Valve (MS5889A/MS5889B). Due to spurious signal, isolation of AFW to the SG 1 is possible; Auxiliary Feedwater manual actions already identify/provide for this event.

    Manual actions to close the appropriate valve(s) or trip the appropriate AFPT to terminate AFW flow to the steam generator associated with the nonaccredited train while maintaining AFW Flow to the accredited steam generator may be required.

48. Reactor Protection System Panel and Source Range Monitoring NI-NI2 and NI-5874A are required to be operable to monitor source range flux. A failure of the circuits would disable monitoring capability in the Control Room. Monitor Source Range at C4808 (NI-5874C) (See Note 45).

49. NOT USED

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50. Atmospheric Vent Valve ICS11B is normally closed and is required to be throttled for Safe Shutdown. A circuit failure or loss of air can disable the remote operation of this valve. SFRCS actuation will ensure the valve remains closed until local manual action is taken. The main steam line safeties will provide a steam release path until local manual control for ICS11B is achieved. Manually operate ICS11B in Room 500.

51. The Main Steam Isolation Valves (MSIV) MS100 and MS101 are normally open and required to be closed for Safe Shutdown. Each MSIV has 5separate solenoids which need to be open for the MSIV to remain open. A review of the circuits for the solenoid shows that a credible number of hot shorts to keep the MSIV's open is not possible. Closing the MSIV's in the Control Room before leaving or de-energizing YE2 AND YF2 by opening Breakers BE1180 on E11B and BF1101 on F11A or its upstream supply, (de-energizing Ch 3/4 of SFRCS) (See Note 47) to de-energize the solenoid valves will close MS100 and MS101.

52. In order to reduce water to the Clean Waste Receiver Tanks, align Makeup Pump 37-1 Recirc to the BWST. Manually open MU208, HP29, and HP1556 and then close MU206.

53. Seal Injection, Seal Return and Letdown (including lineup to Clean Waste Receiver Tanks) are required for Safe Shutdown for a fire in this area. A review of the circuits for the following valves indicate manual operation is required:

COMPONENT	DESCRIPTION	ACTION
MU10A	Mxd Bed 1-1 LtDn In Vlv	On
MU11	Letdown to Radwaste 3-Way-Vlv	Align CWRT
MU19	Seal Inj Inlet Iso Vlv	Close MU214 and Throttle MU216
MU97	Seal Rtn to Cln Wst Tk Iso Vlv	Open
MU182	Seal Rtn to Mkup Tk Iso Vlv	Close
MU6405	RC MU Pump 1-1 Suction Vlv	Verify Open
MU6407	Makeup Recirc Iso Vlv	Verify Open
MU6408	Makeup Cross-Connect Iso Vlv	Verify Open
MU6409	Makeup Cross-Connect Iso Vlv	Verify Open
MU6420	MU32 Bypass Valve	Verify Open
MU6421	Makeup CTMT Iso Valve	Verify Close
MU6422	Makeup CTMT Iso Vlv	Verify Open
WC119	Cln Wst Tk In Iso Vlv	Open
WC120	Cln Wst Tk In Iso Vlv	Open
WC1453	Cln Wste Pri Demin Inlet Vlv	Close
WC1743	Cln Wste Recvr Tk Iso Vlv	Open
WC1747	Cln Wste Recvr Tk Iso Vlv	Open
WC3560	Degasifier Bypass Valve	Open

54. The Makeup Pump 1 (P37-1) and its Lube Oil Pumps P-371B & D are required to be available for Safe Shutdown for a fire in this area. A review of the circuits indicates that control of the pumps can be regained locally after transferring the disconnects. Operate

the pumps locally. (NOTE: Since Lube Oil Pump P-371B is available, Lube Oil Pump P-371C is not required.)

55. Makeup Flow Indicators FI-6425 and FI-6435 are used to monitor makeup flow. A review of the circuits indicates that FI-6425 and FI-6435 may not work. Monitor Pressurizer Level via LI-RC14-1 at the ASP as an indirect means of measuring makeup flow.

56. Pressurizer Level, SG 1-1 Startup Level, SG 1-1 Pressure Indication, RCS Loop 1 Pressure, and SG 2 Startup Level and SG 2 Pressure Indication will be monitored at the Auxiliary Shutdown Panel (ASP). The SG 1 Level and Pressure indicators on the ASP are used to read the SG 2 Level and Pressure by transferring the two-position selector switch on the ASP from SG 1 to SG 2. The cable/connector for the SG 2 pressure signal is manually connected to the selector switch only during unit shutdown (for testing) or during a fire event to ensure that channel separation is maintained. This type of repair is similar to the repair for Hot and Cold Leg Temperature instrumentation documented in the NRC SER (Ref. 2.5.R).

57. RCS Loop 1 Hot and Cold Leg Temperatures and RCS Loop 2 Hot and Cold Leg Temperatures will be monitored locally using a portable instrument. Acceptability of this repair is documented in the NRC SER (Ref. 2.5.R).

58. The Pilot-Operated Relief Valve (PORV) RC2A is normally closed and is required to remain closed to preclude RCS Blowdown to the Pressurizer Quench Tank. Review of the circuits shows that a fire-induced failure of cables for the PORV could result in the inadvertent spurious opening of the valve.

    The PORV Block Valve RC11 is normally open and is required closed for Shutdown purposes in the event the PORV spuriously opens. Therefore, in the event of a fire in the Cable Spreading Room or Control Room, Valve RC11 should be closed by means of the Control Switch HIS-RC11 (C5705) prior to evacuating the Control Room. Afterwards, the circuits need to be isolated from the influence of a fire by operating a Disconnect Switch at CDE-16B, thus ensuring control and indication at MCC E16B.

59. Valves RC200, RC239A, RC239B and RC4632 may be affected by a fire in this area. Manual Valve RC147 (located in Containment, outside the D-Ring) will be closed to provide a High/Low Pressure Interface. This manual action need not be taken for 8-hours because the Quench Tank has sufficient capacity to hold the discharge from this line for at least 8-hours. Even if this flow path were opened, no unrecoverable condition would result because the restricting orifice is sized such that one Makeup Pump could easily handle the flow.

60. Valves RC4608A, B and RC4610A, B are in series and 4 shorts would be required to repower both valves. See E-52B sht 71A & B. Such an occurrence is not credible. The one inch lines include a restricting orifice sized to limit the flow to within the makeup system capacity.

61. Either SWS Pump P3-1 or P3-3, whichever is aligned to Train 1 SWS at the time of the fire, is required for Safe Shutdown. A review of the circuits shows that control can be regained locally by Disconnecting the Control Room circuits (DSA Switch at C1) and

controlling the pump locally. (NOTE: For P3-3, also transfer disconnect at CD and reclose Breaker ACD4. The trip function of this breaker may be disabled).

62. Containment Air Cooler (CAC) 1 SW Inlet and Outlet Valves (SW1366, SW1356) are required to be open to provide containment cooling. A review of the circuits indicates spurious operation and loss of control power is possible for a fire in this area. Therefore, open the breaker [at E11C (SW1366)] and then open/verify open SW1366. Open SW1356 by isolating and bleeding off the air to the valve.

63. AFP 1 Suction Valve SW1382 is normally closed and is required to be closed until the Condensate tanks are low and then opened to supply water to the S/G's. Transfer control to the ASP. Due to the torque/limit switches possibly being bypassed by a hot short, the valve may be damaged such that the valve can not be opened. If this occurs, procedures instruct plant personnel to provide an additional source of water from the Fire Water System. Since this valve is only needed to go to cold shutdown, GL 86-10 allows repairs to be made.

64. SW Nonessential Isolation Valve SW1399 may be opened under normal operation and this flowpath is required to be closed for Safe Shutdown to avoid SWP1-3 or P3-3 flow diversion. A review of the circuits indicates a fire in this area can disable control power and possibly damage SW1399 (Ref. 2.7.F). Close TPCW valves SW54, 55 and 56.

65. SW Discharge Valves to the Intake Structure (SW2929) and Forebay (SW2931) are 2 of 4 SW Discharge Valves SW2929 through SW2932), 1 of which is normally open and depowered (controlled administratively) to ensure SWS Discharge at all times.

    The sole concern is that at least one of these valves remains open, thereby assuring a service water flow outlet. Since one of the valves is normally open and depowered, there is no concern associated with the possibility of spurious closure of SW2929 or SW2931 precluding SWS Discharge capability.

66. Essential CCW is provided to the Makeup Pumps, bypassing CC1460.

67. YE2 associated circuits are not coordinated. This results in loss of YE2. Loss of this panel will cause a reactor trip via ARTS which is acceptable.

68. The Letdown block Orifice Isolation Valve MU04 is normally open and is required to be open to restore Letdown. A review of the circuit indicates spurious closure of this valve is possible. Therefore, verify open MU04.

69. NOT USED

70. SW Flow CCHX 1 Iso Valve SW1424 is normally open and required to be open for Safe Shutdown.

71. Letdown Cooler Inlet Iso Valves MU01A, B are normally open and required to be open after restoring Seal Injection (Note MU02B will be used to maintain High/Low Interface). A review of the circuits indicates spurious closure of the valves is possible. For restoring Letdown, trip breaker and open MU01A. (Note: Verify that MU01B is closed if CC1410 is closed).

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72. Normally closed manual Valve SW325 maintains isolation for CAC 3.

73. Spurious opening of MU6420, MU32 Bypass Valve, could result in Makeup Pump 1 runout. Direct diagnostic indication of Makeup Pump 1 runout is via pump discharge pressure indicator MU25A, locally at the pump. Maintaining a minimum pressure of 2260 psig assures a pump flow of less than 250 gpm and no pump runout condition. (Ref 2.6.O).

74. Spurious operation of the Motor Driven Feed Pump (MDFP) P241 is possible due to hot shorts on control cables in this fire area. Manual Operator Action to close locked valve FW6398 shall be taken to preclude overfill of the credited Steam Generator.