

APPENDIX A

SAFE SHUTDOWN COMPONENTS LIST

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APPENDIX A **SAFE SHUTDOWN COMPONENT LIST**

SYSTEM = AFWS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	AF3869	AFWP 1 DISCH TO SG2	MOV	E	C	C	AS IS		3	H/S C/S	1	M007B	B SO	E11E	1PB1146A	E44B/14A,B	1
1	AF3870	AFWP 1 DISCH TO SG1	MOV	E	O	O	AS IS		3	H/S C/S	1	M007B	SC	D1PA	1PD107A	E44B/20	2
2	AF3871	AFWP 2 DISCH TO SG1	MOV	F	C	C	AS IS		3	H/S C/S	1	M007B	B SO	F12A	2PBF1201A	E44B/14A,B	1
2	AF3872	AFWP 2 DISCH TO SG2	MOV	F	O	O	AS IS		3	H/S C/S	1	M007B	SC	F12B	2PBF1262A	E44B/15	2
2	AF599	AFW TO SG2 ISO VLV	MOV	A	O	O	AS IS		3	H/S C/S	1	M007B	SC	F11A	2PBF1118A	E44B/04C,D	2
1	AF608	AFW TO SG1 ISO VLV	MOV	AB	O	O	AS IS		3	H/S C/S	1	M007B	SC	E11E	1PB1160A	E44B/04C,D	2
2	AF6451	AFWP 2 FLOW CTRL VLV	SOV	F	O	O/C	FO		3	H/S C/S	1	M006D		ZC6451	2CLC6451I	E734A/09	4
														RC3702	2CLY6454C	E44B/24	4, 5
1	AF6452	AFWP 1 FLOW CTRL VLV	SOV	E	O	O/C	FO		3	H/S C/S	1	M006D		C4625	2LLC6451B	E734A/9	4
														ZC6452	1CLC6452I	E734A/9	4
														C3645	1CLC5452B	E734A/9	4
														RC3701	1CLY6453C	E44B/24	4, 5
1/2	E183	MDPF SEAL WTR COOLERS	CLR	II	FUNC	FUNC	N/A	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		N/A	N/A	N/A	15
1/2	E184-1	MDPF SEAL WTR COOLERS	CLR	II	FUNC	FUNC	N/A	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		N/A	N/A	N/A	15
1/2	E184-2	MDPF SEAL WTR COOLERS	CLR	II	FUNC	FUNC	N/A	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		N/A	N/A	N/A	15
1	FW6397	MDPF Flow Iso Valve	MAN	II	O	O/C	AS IS	AFWS Train 2	3	H/S C/S	3	M006D		N/A	N/A	N/A	210
1	FW6459	MDPF FLOW CTRL VALVE	SOV	II	O	O/C	FO	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		N/A	N/A	N/A	
2	FW6460	MDPF FLOW CTRL VLV	SOV	II	O	O/C	FO	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		ZC6459	1CLC6459G	E734A/10	14
														C3645	1LLC6459F	E734A/10	14
2	ICS038A	APPT 2 GOV CTRL VLV	MOV	F	O	O/C	AS IS		3	H/S C/S	1	M003C		ZC6460	2CLC6460G	E734A/10	14
														C4625	2LLC6460D	E734A/10	14
1	ICS038B	APPT 1 GOV CTRL VLV	MOV	E	O	O/C	AS IS		3	H/S C/S	1	M003C		CD12A1 (DC)	2CAFFT02A	E45B/11C	3
														CD12A1 (DC)	2CSD08A	E45B/11A,B	3
1	MS106	APPT 1 MS IN ISO VLV	MOV	EE	C	O	AS IS		3	H/S C/S	1	M003C		CDE12A1 (DC)	1CAFFT01A	E45B/11A,B	3
1	MS106A	APPT 1 MS IN X-CONN	MOV	EE	O	O/C	AS IS	MS106	3	H/S C/S	1	M003C	B	CD12A1 (DC)	1CSD07A	E45B/11C	3
2	MS107	APPT 2 MS IN ISO VLV	MOV	EE	C	O	AS IS		3	H/S C/S	1	M003C		D1NA	1PD135A	E46B/54A,B	6
2	MS107A	APPT 2 MS IN X-CONN	MOV	EE	O	O/C	AS IS	MS107	3	H/S C/S	1	M003C	B	E12B	1PBE1271A	E46B/46A,B	7
1	MS5889A	APPT 1 STEAM ADMISS VLV	SOV	E	C	O	FO		3	H/S C/S	1	M003C		F11A	2PBF1124A	E46B/04A,B	6
														F11B	2PBF1188A	E46B/46A	7
2	MS5889B	APPT 2 STEAM ADMISS VLV	SOV	F	C	O	FO		3	H/S C/S	1	M003C	SC	CS709	1CV5889AA	E46B/71	8, 5
														CS762A	1CV5889AA	E46B/71	5, 8
														CS709	2CV5889BA	E46B/71	8, 5
														CS792	2CV5889BA	E46B/71	5, 8
2	MS728	APPT 2 MS IN X-CONN	MAN	F	C	O	N/A	MS106/107	3	H/S C/S	2	M003C	B	N/A	N/A	N/A	6
1	MS733	APPT 1 MS IN X-CONN	MAN	E	C	O	N/A	MS106/107	3	H/S C/S	2	M003C	B	N/A	N/A	N/A	6
1	P14-1	TD AUX FW PUMP 1	PUMP	E	OFF	ON	OFF		3	H/S C/S	1	M006D		N/A	N/A	N/A	9
2	P14-2	TD AUX FW PUMP 2	PUMP	F	OFF	ON	OFF		3	H/S C/S	1	M006D		N/A	N/A	N/A	9
1/2	P241	MTR DRIVEN FEED PUMP	PUMP	II	OFF	ON	OFF	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		N/A	N/A	N/A	
1/2	P242-1	MDPF AUX LUBE OIL PUMP	PUMP	II	OFF	ON	OFF	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		D2	BPAD210H	E44B/01A	10
1/2	P242-2	MDPF SHAFT DRVN LO PUMP	PUMP	II	FUNC	FUNC	N/A	AFWS TRAIN 1&2	3	H/S C/S	3	M006D		F71	BPBF7114A	E44B/25	11
1/2	T31-1	COND STO TANK 1-1	TANK	II	FUNC	FUNC	N/A		3	H/S C/S	1	M006E		N/A	N/A	N/A	12
1/2	T31-2	COND STO TANK 1-2	TANK	II	FUNC	FUNC	N/A		3	H/S C/S	1	M006E		N/A	N/A	N/A	16

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2- BACKUP COMPONENT, 3- ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = CACS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	C1-1	CAC FAN 1	FAN	D	O/F	ON	OFF		5	H/S C/S	1	M029E		E14	1PBE1401A	E58B/01A, B	17
2	C1-2	CAC FAN 2	FAN	D	O/F	ON	OFF		5	H/S C/S	1	M029E		F14	2PBF1401A	E58B/01A, B	17
1/2	C1-3	CAC FAN 3	FAN	D	O/F	ON	OFF	C1-1, C1-2	5	H/S C/S	1	M029E		E15	1CBF1501C	E58B/02A, B	17
														F15	2CBF1501C	E58B/02A, B	17
1	E37-1	CAC COIL 1	HX	D	O/F	O	AS IS		5		1	M029E		N/A	N/A	N/A	17
2	E37-2	CAC COIL 2	HX	D	O/F	O	AS IS		5		1	M029E		N/A	N/A	N/A	17
1/2	E37-3	CAC COIL 3	HX	D	O/F	O	AS IS	E37-1, E37-2	5		1	M029E		N/A	N/A	N/A	17

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = CCWS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1/2	CC1407A	CCW OUT ISO VLV FROM CTMT	MOV	D	O	O	AS IS		5	H/S C/S	1	M036C	SC	E11B	1PBE1173A	E50B/09A,B	26
1/2	CC1407B	CCW OUT ISO VLV FROM CTMT	MOV	A	O	O	AS IS		5	H/S C/S	1	M036C	SC	F11B	2PBF1158A	E50B/10A,B	26
1	CC1409	CCW TO LETDOWN CLR 1 IN VLV	MOV	D	O/C	O/C	AS IS		5	H/S C/S	1	M036C		F12A	2PBF1227A	E52B/17B	28
2	CC1410	CCW TO LETDOWN CLR 2 IN VLV	MOV	D	O/C	O/C	AS IS		5	H/S C/S	1	M036C		F12A	2PBF1228A	E52B/17B	28
1/2	CC1411A	CCW INLET ISO VLV TO CTMT	MOV	D	O	O	AS IS		5	H/S C/S	1	M036C	SC	E11B	1PBE1176A	E50B/23A,B	26, 5
														RC3704	1CLR3757A	E50B/25	5, 26
1/2	CC1411B	CCW INLET ISO VLV TO CTMT	MOV	A	O	O	AS IS		5	H/S C/S	1	M036C	SC	F11B	2PBF1159A	E50B/24A,B	26, 5
														RC3705	2CLR3758A	E50B/25	5, 26
1/2	CC1460	CC TO MU PMP HDR IN VLV	SOV	T	O/C	O(M)	FC	HPIS TRAIN 1&2	5	H/S C/S	1	M036A		C5717(AC)	2CV1460D	E50B/12A	25, 5
														C5755C(DC)	2CV1460E	E50B/12A	25, 5
1	CC1467	DHR CLR 1 OUT ISO VLV	SOV	AB	C	O	FO		5	C/S	1	M036B		C5716(AC)	1CV1467C	E50B/11	18, 5
														C5762C(DC)	1CV1467E	E50B/11	18, 5
2	CC1469	DHR CLR 2 OUT ISO VLV	SOV	AB	C	O	FO		5	C/S	1	M036B		C5716(AC)	2CV1469C	E50B/11	18, 5
														C5755C(DC)	2CV1469E	E50B/11	18, 5
1	CC1471	DG JKT CW HX 1 OUT VLV	MAN	K	O	O	AS IS		5	H/S C/S	1	M036B		N/A	N/A	N/A	19
2	CC1474	DG JKT CW HX 2 OUT VLV	MAN	J	O	O	AS IS		5	H/S C/S	1	M036B		N/A	N/A	N/A	19
1	CC1495	NON-ESSENTIAL IN ISOL (SEAL RETURN)	SOV	U	O	O/C	FC		5	H/S C/S	1	M036A	B	C5717(AC)	1CV1495C	E50B/15A	20, 5
														C5762C(DC)	1CV1495E	E50B/15A	20, 5
1	CC2645	CC RETURN HDR 1 VLV	MOV	G	O/C	O/C	AS IS	HPIS TRAIN 1&2	5	H/S C/S	1	M036B		E11D	1PBE1161A	E50B/13A,B	21
														RC3607(DC)	1CCCW001A	E50B/28	21, 5
2	CC2649	CC RETURN HDR 2 VLV	MOV	G	O/C	O/C	AS IS	HPIS TRAIN 1&2	5	H/S C/S	1	M036B		RC3704(AC)	1CLR3757A	E50B/25	21, 5
														F11D	2PBF1161A	E50B/13A,B	21
														RC3608(DC)	2CCCW002A	E50B/28	21, 5
														RC3705(AC)	2CLR3758B	E50B/25	21, 5
1/2	CC42	Nonessential CCW Isolation Valve	MAN	U	O	O/C	AS IS		5	H/S C/S	2	M036A		N/A	N/A	N/A	208
1/2	CC43	Nonessential CCW bypass Valve	MAN	U	C	O/C	AS IS		5	H/S C/S	2	M036A		N/A	N/A	N/A	209
1	CC5095	CC HDR 1 IN ISO VLV	MOV	T	O/C	O	AS IS		5	H/S C/S	1	M036A		E12A	1PBE1226A	E50B/13A,B	22
														RC3607(DC)	1CCCW001A	E50B/28	5, 22
2	CC5096	CC HDR 2 IN ISO VLV	MOV	T	O/C	O	AS IS		5	H/S C/S	1	M036A		RC3704(AC)	1CLR3757A	E50B/25	5, 22
														F11A	2PBF1106A	E50B/13A,B	22
														RC3608(DC)	2CCCW002A	E50B/28	5, 22
1	CC5097	CCW LINE 1 RET ISO VLV	MOV	T	O/C	O/C	AS IS		5	H/S C/S	1	M036B		RC3705(AC)	2CLR3758A	E50B/25	5, 22
														E12A	1PBE1227A	E50B/13A,B	27
2	CC5098	CCW LINE 2 RET ISO VLV	MOV	T	O/C	O/C	AS IS		5	H/S C/S	1	M036B		RC3607(DC)	1CCCW001A	E50B/28	5, 27
														RC3704(AC)	1CLR3757A	E50B/25	5, 27
														F11A	2PBF1119A	E50B/13A,B	27
														RC3608(DC)	2CCCW002A	E50B/28	5, 27
														RC3705(AC)	2CLR3758A	E50B/25	5, 27
1	E22-1	CCW HEAT EXCHANGER 1-1	H/EX	T	FUNC	FUNC	N/A		5	H/S C/S	1	M036A		N/A	N/A	N/A	23
2	E22-2	CCW HEAT EXCHANGER 1-2	H/EX	T	FUNC	FUNC	N/A		5	H/S C/S	1	M036A		N/A	N/A	N/A	23
1/2	E22-3	CCW HEAT EXCHANGER 1-3	H/EX	T	FUNC	FUNC	N/A		5	H/S C/S	1	M036A		N/A	N/A	N/A	23
2	FIS1422D	FLOW SWITCH CCWS PUMP	FS	T	ON	ON	OFF		5	H/S C/S	1	M036A		D2P	2CD2P23A	E633B/23	30
1	FIS1427C	FLOW SWITCH CCWS PUMP	FS	T	ON	ON	OFF		5	H/S C/S	1	M036A		D1P	1CD1P23A	E633B/23	30
2	FIS1427D	FLOW SWITCH CCWS PUMP	FS	T	ON	ON	OFF		5	H/S C/S	1	M036A		D2P	2CD2P23A	E633B/23	30
1	FIS1432C	FLOW SWITCH CCWS PUMP	FS	T	ON	ON	OFF		5	H/S C/S	1	M036A		D1P	1CD1P23A	E633B/23	30
1	P43-1	CCW PUMP 1	PUMP	T	O/F	ON	OFF		5	H/S C/S	1	M036A		C1	1PAC113A	E50B/03D	24
														RC3607(DC)	1CCCW001A	E50B/28	5, 24
2	P43-2	CCW PUMP 2	PUMP	T	O/F	ON	OFF		5	H/S C/S	1	M036A		D1	2PAD113A	E50B/03D	24
														RC3608(DC)	2CCCW002A	E50B/28	5, 24
1/2	P43-3	CCW PUMP 3	PUMP	T	O/F	ON	OFF		5	H/S C/S	1	M036A		C1	1PAC108A	E50B/04A,C	24
														D1	2PAD108A	E50B/04A,C	24
														C1	1CACD2B	E50B/4C	24
														D2P	2CACD3F	E50B/04D	24
														D1P	1PD1P06A	E640A/1A	24
														D1	2CAD3B	E50B/4C	24
														D2P	2PD2P06A	E640A/2A	24
1/2	T-12	CCW SURGE TANK	TANK	EE	FUNC	FUNC	N/A		5	H/S C/S	1	M036A		N/A	N/A	N/A	23

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = CFS

TRAIN	COMPONENT	D E S C R I P T I O N	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- -MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- -ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	CF01A	CORE FLOOD TK 2 ISO VLV	MOV	D	O	C	AS IS		N/A	C/S	1	M034	B	CDF11A1(AC) F11A	2CVCF01AA 2PBF1120A	E52B/27A E52B/27	31 31
1	CF01B	CORE FLOOD TK 1 ISO VLV	MOV	D	O	C	AS IS		N/A	C/S	1	M034	B	CDE11B1(AC) E11B	1CVCF01BA 1PBE1162A	E52B/27A E52B/27	31 31

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUPCOMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANTMAKEUP, 3-REACTOR HEAT REMOVAL, 4-PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = CREVS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- -MANCE GOALS	REQUIRED FOR H/S,C/S	PRIOR- -ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	C21-1	CTRM EVS FAN 1	FAN	HH	OFF	ON	OFF		5	H/S C/S	1	M027A		E12A	1PBE1209A	E60B/01	32
2	C21-2	CTRM EVS FAN 2	FAN	HH	OFF	ON	OFF		5	H/S C/S	1	M027A		F11A	2PBF1149A	E60B/01	32
1	E106-1	CREVS COOLING COIL	H/EX	HH	FUNC	FUNC	N/A		5	H/S C/S	1	M027A		N/A	N/A	N/A	37
2	E106-2	CREVS COOLING COIL	H/EX	HH	FUNC	FUNC	N/A		5	H/S C/S	1	M027A		N/A	N/A	N/A	37
1	F22-1	CREVS FILTER BANK	FLT	HH	FUNC	FUNC	N/A		5	H/S C/S	1	M027A		N/A	N/A	N/A	38
2	F22-2	CREVS FILTER BANK	FLT	HH	FUNC	FUNC	N/A		5	H/S C/S	1	M027A		N/A	N/A	N/A	38
1	S33-1	CTRM EMERG A/C UNIT 1	A/C	HH	OFF	ON	OFF		5	H/S C/S	1	M027A		E12A	1PBE1216A	E801	33
														C6708	1CCEAC1C	E801	33
														C6714	1CPTS898A	E801	33
2	S33-2	CTRM EMERG A/C UNIT 2	A/C	HH	OFF	ON	OFF		5	H/S C/S	1	M027A		F11A	2PBF1131A	E801	33
														C6709	2CCEAC2E	E801	33
														C6715	2LFTS899A	E801	33
1	SV4823A	CREVS CONDENSER UNIT 1 (S33-1) IN VLV	SOV	HH	C	O	CLOSED		5	H/S C/S	1	M027A		C6708	1CCEAC1G	E817/53A	34
2	SV4827A	CREVS CONDENSER UNIT 2 (S33-2) IN VLV	SOV	HH	C	O	CLOSED		5	H/S C/S	1	M027A		C6709	2CCEAC2G	E817/54A	34

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = CSS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S,C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	CS1530	CTMT SPRAY ISO VLV	MOV	AB	C	C	AS IS	P56-1	N/A	H/S C/S	1	M034	B SO	E11C	1PBE1156A	E52B/21A,B	40
2	CS1531	CTMT SPRAY ISO VLV	MOV	A	C	C	AS IS	P56-2	N/A	H/S C/S	1	M034	B SO	F11B	2PBF1147A	E52B/21A,B	40
1	P56-1	CS PUMP 1	PUMP	AB	OFF	OFF	OFF	CS1530	N/A	H/S C/S	2	M034	B SS	E1	1PBE1111A	E52B/07A,B	39
2	P56-2	CS PUMP 2	PUMP	A	OFF	OFF	OFF	CS1531	N/A	H/S C/S	2	M034	B SS	F1	2PBF111A	E52B/07A,B	39

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = DHRS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	DH01A	LPI LINE 2 VLV	MOV	A	O	O	AS IS		2,3	C/S	1	M033B	SC	F11C	2PBF1136A	E52B/60B	42
1	DH01B	LPI LINE 1 VLV	MOV	AB	O	O	AS IS		2,3	C/S	1	M033B	SC	E11A	1PBE1106A	E52B/60B	42
2	DH07A	BWST ISO VLV A	MOV	AC	O	O	AS IS		2	H/S C/S	1	M033A	SC	F11B	2PBF1148A	E52B/19A,C	43
1	DH07B	BWST ISO VLV B	MOV	AC	O	O	AS IS		2	H/S C/S	1	M033A	SC	E11A	1PBE1157A	E52B/19A,C	43
2	DH09A	CTMT SUMP ISO VLV A	MOV	AB	C	C	AS IS		2	H/S C/S	1	M033C	B SO	F11C	2PBF1142A	E52B/19B,C	44
1	DH09B	CTMT SUMP ISO VLV B	MOV	AB	C	C	AS IS		2	H/S C/S	1	M033B	B SO	E11A	1PBE1112A	E52B/19B,C	44
2	DH11	DH NORM SUCT LINE VLV	MOV	D	C	O/C	AS IS		2,3	C/S	1	M033B	H/L	CDF11A1 (AC)	2CBF1130E	E52B/24A,B	45
														F11A	2PBF1130A	E52B/24A,B	45
1	DH12	DH NORM SUCT LINE VLV	MOV	D	C	O/C	AS IS		2,3	C/S	1	M033B	H/L	CDE11B2 (AC)	1CBEL183H	E52B/24C,D	45
														E11B	1PBE1183A	E52B/24C,D	45
2	DH13A	DH CLR 2 BYPASS VLV	SOV	AB	C	C	FC		2	C/S	1	M033C	SO	C5717 (AC)	2CVDH13AG	E52B/25B	48, 5
														C5755C (DC)	2CVDH13AB	E52B/25B	48, 5
1	DH13B	DH CLR 1 BYPASS VLV	SOV	AB	C	C	FC		2	C/S	1	M033B	SO	C5717 (AC)	1CVDH13BE	E52B/25B	48, 5
														C5762C (DC)	1CVDH13BB	E52B/25B	48, 5
2	DH14A	DH CLR 2 OUT VLV	SOV	AB	O	O	FO		2,3	C/S	1	M033C	SC	C5717 (AC)	2CVDH14AE	E52B/25B	49, 5
														C5755C (DC)	2CVDH14AB	E52B/25B	49, 5
1	DH14B	DH CLR 1 OUT VLV	SOV	AB	O	O	FO		2,3	C/S	1	M033B	SC	C5717 (AC)	1CVDH14BE	E52B/25B	49, 5
														C5762C (DC)	1CVDH14BB	E52B/25B	49, 5
1	DH1517	DH NORM SUCT LINE 1 VLV	MOV	A	C	O/C	AS IS		3	C/S	1	M033B		E11D	1PBE1126A	E52B/22	46
2	DH1518	DH NORM SUCT LINE 2 VLV	MOV	A	C	O/C	AS IS		3	C/S	1	M033C		F11C	2PBF1129A	E52B/22	46
1	DH2733	DH PUMP 1 BWST SUCT VLV	MOV	AB	O	O/C	AS IS		2,3	C/S	1	M033B		E11A	1PBE1121A	E52B/23B	47
2	DH2734	DH PUMP 2 BWST SUCT VLV	MOV	AB	O	O/C	AS IS		2	C/S	1	M033C		F11C	2PBF1134A	E52B/23B	47
1/2	DH2735	DH AUX SPRAY STOP VLV	MOV	D	C	C	AS IS		3	C/S	1	M033B	B SO	E11B	1CBEL155C	E52B/1	52
1/2	DH2736	DH AUX SPRAY THREL VLV	MOV	A	C	C	AS IS		3	C/S	1	M033B	B SO	F11A	2CBF1125C	E52B/2B	52
2	DH63	LPI/HPI CROSS-TIE VLV	MOV	A	C	C	AS IS		2,3	C/S	1	M033B	SO	F11E	2PBF1195A	E52B/66	51, 5
1	DH64	LPI/HPI CROSS-TIE VLV	MOV	AB	C	C	AS IS		2,3	C/S	1	M033B	SO	E11E	1PBE1187A	E52B/66	51, 5
1	E27-1	DHRS COOLER 1-1	CLR	AB	FUNC	FUNC	N/A		3	C/S	1	M033B		N/A	N/A	N/A	54
2	E27-2	DHRS COOLER 1-2	CLR	AB	FUNC	FUNC	N/A		3	C/S	1	M033C		N/A	N/A	N/A	54
1	P42-1	DHR/LPI PUMP 1	PUMP	AB	OFF	O/F	OFF		2,3	C/S	1	M033B		C1	1PAC1122A	E52B/06A,B	41
2	P42-2	DHR/LPI PUMP 2	PUMP	A	OFF	O/F	OFF		2,3	C/S	1	M033C		D1	2PAD1122A	E52B/06C,D	41
1/2	T-10	BORATED WATER STORAGE TANK	TANK	OS	FUNC	FUNC	N/A		2	H/S C/S	1	M033A		N/A	N/A	N/A	55

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A SAFE SHUTDOWN COMPONENT LIST

SYSTEM = EDG

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	DA1147A/B	EDG 1 AIR START VLV	SOV	K	C	O	FC		5	H/S C/S	1	M017B		C3615(DC)	1CGD104A	E64B/01F	59
2	DA1148A/B	EDG 2 AIR START VLV	SOV	J	C	O	FC		5	H/S C/S	1	M017B		C3616(DC)	2CGD204A	E64B/02F	59
1	DA2987	AIR START RCVR 1-1-1 DISCH VLV	AOV	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
1	DA2988	AIR START RCVR 1-1-2 DISCH VLV	AOV	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
2	DA2989	AIR START RCVR 1-2-1 DISCH VLV	AOV	J	O	O	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
2	DA2994	AIR START RCVR 1-2-2 DISCH VLV	AOV	J	O	O	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
1	DA60	AIR START RCVR 1-1-1 RELAY VLV	AOV	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
1	DA61	AIR START RCVR 1-1-2 RELAY VLV	AOV	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
2	DA62	AIR START RCVR 1-2-1 RELAY VLV	AOV	J	O	O	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
2	DA63	AIR START RCVR 1-2-2 RELAY VLV	AOV	J	O	O	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	57
1	E10-1	EDG 1 JACKET WATER HEAT EXCH	H/EX	K	FUNC	FUNC	N/A		5	H/S C/S	1	M036B		N/A	N/A	N/A	69
2	E10-2	EDG 2 JACKET WATER HEAT EXCH	H/EX	J	FUNC	FUNC	N/A		5	H/S C/S	1	M036B		N/A	N/A	N/A	69
1	K5-1	EMERG DIESEL GENERATOR 1	EDG	K	O/F	ON	OFF		5	H/S C/S	1	M017A		EDG1-1	1CGD101C	E27	60
														D1N, D1P	1CGD102A	E64B/1C	60
														D1N, D1P	1CGD105A	E64B/1G	60
														D1N, D1P	1CGD106A	E64B/1G	60
														D1N, D1P	1CGD108C	E64B/13	60
														D1N, D1P	1CGD110A	E64B/15	60
2	K5-2	EMERG DIESEL GENERATOR 2	EDG	J	O/F	ON	OFF		5	H/S C/S	1	M017A		EDG1-2	2CGD201C	E27	60
														D2N, D2P	2CGD202A	E64B/2C	60
														D2N, D2P	2CGD205A	E64B/1H	60
														D2N, D2P	2CGD206A	E64B/1H	60
														D2N, D2P	2CGD208A	E64B/13	60
														D2N, D2P	2CGD210A	E64B/15	60
1	P148-1A	EDG JACKET WATER PUMP (RIGHT)	PUMP	K	O/F	O	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
1	P148-1B	EDG JACKET WATER PUMP (LEFT)	PUMP	K	O/F	O	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
2	P148-2A	EDG JACKET WATER PUMP (RIGHT)	PUMP	J	O/F	O	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
2	P148-2B	EDG JACKET WATER PUMP (LEFT)	PUMP	J	O/F	O	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
1	P150-1	EDG 1 PRESS PUMP	PUMP	K	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
2	P150-2	EDG 2 PRESS PUMP	PUMP	J	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
1	P195-1	EDG FUEL OIL TRANSFER PUMP 1	PUMP	BN	OFF	ON	OFF		5	C/S	1	M017A		E12F	1PBE1298A	E64B/10C	56
2	P195-2	EDG FUEL OIL TRANSFER PUMP 2	PUMP	BN	OFF	ON	OFF		5	C/S	1	M017A		F12A	2PBF1230A	E064B/10C	56
1	P201-1	EDG 1-1 M/D FUEL OIL PUMP	PUMP	K	O/F	ON	OFF	P205-1	5	H/S C/S	1	M017A		C3621	N/A	N/A	58
1	P201-2	EDG 1-2 M/D FUEL OIL PUMP	PUMP	J	O/F	ON	OFF	P205-2	5	H/S C/S	2	M017A		C3622	N/A	N/A	58
2	P205-1	EDG 1-1 E/D FUEL OIL PUMP	PUMP	K	O/F	ON	OFF	P201-1	5	H/S C/S	1	M017A		N/A	N/A	N/A	58
2	P205-2	EDG 1-2 E/D FUEL OIL PUMP	PUMP	J	O/F	ON	OFF	P201-2	5	H/S C/S	2	M017A		N/A	N/A	N/A	58
1	P264-1	EDG 1 SCAVR PUMP	PUMP	K	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
2	P264-2	EDG 2 SCAVR PUMP	PUMP	J	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
1	P265-1	EDG 1 PISTON CLG PUMP	PUMP	K	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
2	P265-2	EDG 2 PISTON CLG PUMP	PUMP	J	OFF	ON	OFF		5	H/S C/S	1	N/A		N/A	N/A	N/A	68
1	P8-1	DO XFER PUMP 1	PUMP	BM	O/F	O	OFF	P195-1	5	H/S C/S	3	M017C		E12B	APBE1257A	E64B/10A	203
1	S206-01	EDG 1 AIR START MOTOR	MTR	K	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
1	S206-02	EDG 1 AIR START MOTOR	MTR	K	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
1	S206-03	EDG 1 AIR START MOTOR	MTR	K	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
1	S206-04	EDG 1 AIR START MOTOR	MTR	K	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
2	S207-01	EDG 2 AIR START MOTOR	MTR	J	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
2	S207-02	EDG 2 AIR START MOTOR	MTR	J	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
2	S207-03	EDG 2 AIR START MOTOR	MTR	J	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
2	S207-04	EDG 2 AIR START MOTOR	MTR	J	OFF	ON	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	64
1	T153-1	EDG FUEL OIL TANK 1-1	TANK	BN	FUNC	FUNC	N/A		5	C/S	1	M017A		N/A	N/A	N/A	62
2	T153-2	EDG FUEL OIL TANK 1-2	TANK	BN	FUNC	FUNC	N/A		5	C/S	1	M017A		N/A	N/A	N/A	62
1	T46-1	EDG DAY TANK 1-1	TANK	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017A		N/A	N/A	N/A	61
2	T46-2	EDG DAY TANK 1-2	TANK	J	FUNC	FUNC	N/A		5	H/S C/S	1	M017A		N/A	N/A	N/A	61
1	T86-1	EDG STARTING AIR RECEIVER 1-1-1	TANK	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	63
1	T86-2	EDG STARTING AIR RECEIVER 1-1-2	TANK	K	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	63
2	T86-3	EDG STARTING AIR RECEIVER 1-2-1	TANK	J	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	63
2	T86-4	EDG STARTING AIR RECEIVER 1-2-2	TANK	J	FUNC	FUNC	N/A		5	H/S C/S	1	M017B		N/A	N/A	N/A	63

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A SAFE SHUTDOWN COMPONENT LIST

SYSTEM = ESSPWR

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW. /SHT.	NOTES	
1	1N	125VDC STATION BATTERY	BATT	Y	ON	ON	OFF	BACKFEED D2	5	H/S C/S	1	E7		N/A	1PD131A	E007	87	
1	1P	125VDC STATION BATTERY	BATT	Y	ON	ON	OFF		5	H/S C/S	1	E7			1PD104A	E007	87	
2	2N	125VDC STATION BATTERY	BATT	X	ON	ON	OFF		5	H/S C/S	1	E7			2PD231A	E007	87	
2	2P	125VDC STATION BATTERY	BATT	X	ON	ON	OFF		5	H/S C/S	1	E7			2PD204A	E007	87	
1/2	BUS B	13.8 kV SWITCHGEAR (BREAKER HBBD)	SWGR	Q	ON	ON	OFF		5	H/S C/S	2	E1/1			BDP	E23B	205	
1	C1	4.16KV AC SWGR	SWGR	S	ON	ON	OFF		5	H/S C/S	1	E1/1		EDG 1-1	1PAC101A	E64B/1A	70	
															D1P	1PD1P05A	E640A/1A	70
															D1N	3PD1N05A	E640A/3A	70
															C1	1CABDC1C	E34B/3	70
															C1	1CAC101D	E64B/1A	70
															C1	1CAC1033A	E22/1	70
															C1	1CAC103A	E34B/13	70
1	C2	4.16KV AC SWGR	SWGR	S	ON	ON	OFF	P3-1,-2,-3	5	H/S C/S	3	E1/1			D1P	1CGD103B	E64B/1E	70
															C1	1PAC110A	E34B/5	81
															D1	ACAACC2A	E34B/1	81
															DAP	APDAP07A	E642A/1A	86
															DAN	APDAN07A	E642A/3A	86
															C1	ACAC2032A	E22/1	81
1	C3615	EDG1-1 ELECT CONTROL & RELAY PANEL	PNL	K	ON	ON	OFF		5	H/S C/S	1	E7			Y1	1PY105A	E50B/16	80
															Y3	3PY305A	E641A/3A	80
															D1P	1PD1P09A	E640A/1A	80
2	C3616	EDG1-2 PANEL LIGHTS (ALT PWR)	PNL	J	ON	ON	OFF		5	H/S C/S	1	E7			D1N	3PD1N09A	E640A/3A	80
															Y4	4PY405A	E641A/4A	80
															Y2	2PY205A	E50B/16	80
															D2N	4PD2N09A	E640A/4A	80
															D2P	2PD2P09A	E640A/2A	80
1	C3621	DG GOV + VLTG CNTRL PNL	PNL		ON	ON	OFF		5	H/S C/S	1	N/A			D1P	N/A	M180-10	80
2	C3622	DG GOV + VLTG CNTRL PNL	PNL		ON	ON	OFF		5	H/S C/S	1	N/A			D2P	N/A	M180-10	80
1	C3628	CONT POWER ESS METER HPI FLOW X	PNL	R	ON	ON	OFF		5	H/S C/S	1	E734A/5			Y1	1CY108B	E641A/1A	162
2	C3629	CONT POWER ESS METER HPI FLOW Y	PNL	R	ON	ON	OFF		5	H/S C/S	1	E734A/5			Y2	2CY208B	E641A/2A	162
1	C3630	CONT POWER TO AUX SD PANEL INST	PNL	R	ON	ON	OFF		5	H/S C/S	1	E734A/4			Y1	1CY108A	E641A/1A	150
															Y2	2CY208A	E641A/2A	150
1	C3645	CONT POWER TO AUX FW CONTROL PNL	PNL	S	ON	ON	OFF		5	H/S C/S	1	E734A/9			Y1A (AC)	1CY104AA	E908A	1, 4
2	C4602	NEUTRON FLUX MON. CABINET (CH.2)	PNL	DF	ON	ON	OFF		5	H/S C/S	1	N/A			Y2A	2CY208AA	E1049/3	153
2	C4625	CONT POWER TO AUX FW CONTROL PANEL	PNL	X	ON	ON	OFF		5	H/S C/S	1	E734A/9			Y2A	2CY204AA	E909A	1, 4
1	C4808	NEUTRON FLUX MON. CABINET (CH.1)	PNL	DG	ON	ON	OFF		5	H/S C/S	1	N/A			Y1	1CY108AA	E1049/1	153
1/2	C5705	CONT POWER (PORV IND LIGHTS)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y2	2CY211A	E52B/13	74, 5
															Y4	2CY419A	E641/4A	74, 5
1	C5708	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y2	2CY211C	E641/2A	74
1	C5709	CNTRL POWER PROCESS MON (DIXSON)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y1	1CY112C	E641/1A	74
1	C5716	CONTROL POWER PROCESS MON (DIXSON)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y1	1CY112A	E641A/1A	74
															Y2	2CYC11A	E641/2A	74
1	C5717	CONT POWER SV IND LIGHTS	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E50B/15A			Y1	1CY116A	E641A/1A	73, 5
															Y2	2CY212A	E641A/2A	73, 5
2	C5755C	SFAS POWERED SV CH.2	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E16/1			D2P	2CD2P19A	E640A/2A	198
2	C5755E	CONTROL ROOM REACT PROT. SYS PNL(CH.2)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y2	2CY206A	E641A/2A	153
2	C5755G	POST ACCIDENT MON. RACK (CH.2)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y2A	2CY2A205A	E909A	153
2	C5756D	SFAS LOGIC ACTUATED CH2	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E761			Y4	4CY407A	E641A/4A	198
															D2P	2CD2P18A	E640A/2A	198
2	C5759C	INST POWER NNI-X BUS	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E7			YBU	BPYBU51A	E643A/4	153
1	C5760D	INST POWER FD TO NNI-Y BUS	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E726A/7			YAU	APYAU26A	E643A/1	153
1/2	C5761A	CH 1 SFRCS XMTR & LOGIC	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E7			Y1	1CY115B	E641A/1A	198
															YE2	1CYE211A	E641A/2B	198
1	C5762A	CONTROL POWER TO SFRCS CH3 RELAY	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			D1P	1PD1P11A	E640A/1	198
															Y1	1CY121A	E641A/1B	198
1	C5762C	SFAS POWERED SV CH.1	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E16/1			D1P	1CD1P18A	E640A/1A	5, 198
1	C5762D	SFAS LOGIC ACTUATED CH 1	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E761			N/A	1CY107A	E641A/1A	198
															Y1	1CY107A	E641A/1A	198
1	C5762E	CONTROL ROOM REACT PROT. SYS PNL (CH1)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y1	1CY106A	E641A/1A	153
1	C5763A	POST ACCIDENT MON. SYS PNL (CH1)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			Y1A	1CY1A105A	E908A	153
1	C5763D	SFAS POWERED SV CH.1	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E16/1			N/A	3CY307A	E641A /3A	198
															D1P	1CD1P19A	E640A/1A	198
															Y3	3CY307A	E641A/3A	198
2	C5792	CONTROL ROOM SFRCS CABINET (CH2)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A			D2P	2PD2P11A	E640A/2A	5, 198
															Y2	2CY221B	E641A/2B	198

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3-REACTOR HEAT REMOVAL, 4-PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = ESSPWR

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1/2	C5792A	CH 2 SFRCS XMTR & LOGIC	PNL	FF	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY215B	E641A/2A	198
2	C5798	POST ACCIDENT MON. IND. PNL (CH2)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A		YF2	2CYF211A	E641A/2A	198
1	C5799	POST ACCIDENT MON. IND. PNL (CH1)	PNL	FF	ON	ON	OFF		5	H/S C/S	1	N/A		Y2A	2CY207AA	E909A	5,153
1	C6708	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	ON	ON	OFF		5	H/S C/S	1	E801		Y1A	2CY209AA	E909A	5,153
2	C6709	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	ON	ON	OFF		5	H/S C/S	1	E801		Y1A	1CY107AA	E908A	5,153
1	C6714	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	ON	ON	OFF		5	H/S C/S	1	E801		Y1A	1CY109AA	E908A	5,153
2	C6715	CTRM EMERGENCY HVAC CONTROL PANEL	PNL	HH	ON	ON	OFF		5	H/S C/S	1	E801		Y1	1CY104B	E641A/1A	201
1	CDE-11B-1	CONTROL POWER (LOADS NON-SSD)	PNL	V	ON	OFF	ON		5	H/S C/S	1	E52B/27		Y2	2CY204A	E641A/2A	201
1	CDE-11B-2	CONT POWER TO DH12 INTLK	PNL	V	ON	ON	OFF		5	H/S C/S	1	E52B/24D		Y2	1LV4906B	E801	201
1	CDE-12A-1	D1P CONT POWER TO AFWP GOV (ICS038A)	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E45B/11C		Y1	1CY104B	E641A/1A	201
2	CDF-11A-1	CONTROL DISCONNECT TRANSFER SWITCH	PNL	DF	ON	ON	OFF		5	H/S C/S	1	N/A		Y2	2CY204B	E641A/2A	201
2	CDF-12A-1	D2P CONT POWER TO AFWP GOV (ICS038B)	PNL	X	ON	ON	OFF		5	H/S C/S	1	E45B/11C		Y2	2CY204B	E641A/2A	201
2	D1	4.16KV AC SWGR	SWGR	Q	ON	ON	OFF		5	H/S C/S	1	E1/1		Y2	2CY204B	E641A/2A	201
1	D1N	125VDC DIST PNL	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	D1NA	125VDC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	D1P	125VDC DIST PNL	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	D1PA	125VDC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	D2	4.16KV SWGR	SWGR	Q	ON	ON	OFF	AFWS TRAIN 1&2	5	H/S C/S	3	E1/1		Y2	2CY204B	E641A/2A	201
2	D2N	125VDC DIST PNL	MCC	X	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	D2P	125VDC DIST PNL	MCC	X	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DAN	125VDC DIST PANEL	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DAF	125VDC DIST PANEL	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DBC1N	125VDC BATTERY CHARGER	BCHG	Y	FUNC	FUNC	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DBC1P	125VDC BATTERY CHARGER	BCHG	Y	FUNC	FUNC	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DBC1PN	125VDC BATTERY CHARGER	BCHG	Y	FUNC	FUNC	OFF	DBC1P, DBC1N	5	H/S C/S	2	E7		Y2	2CY204B	E641A/2A	201
2	DBC2N	125VDC BATTERY CHARGER	BCHG	X	FUNC	FUNC	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	DBC2P	125VDC BATTERY CHARGER	BCHG	X	FUNC	FUNC	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	DBC2PN	125VDC BATTERY CHARGER	BCHG	X	FUNC	FUNC	OFF	DBC2P, DBC2N	5	H/S C/S	2	E7		Y2	2CY204B	E641A/2A	201
2	DBN	125VDC DIST PANEL	MCC	X	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	DBP	125VDC DIST PANEL	MCC	X	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	DC MCC 1	250/125V DC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
2	DC MCC 2	250/125V DC MCC	MCC	X	ON	ON	OFF		5	H/S C/S	1	E7		Y2	2CY204B	E641A/2A	201
1	E1	480 VAC MCC E1	SWGR	Y	ON	ON	OFF		5	H/S C/S	1	E1/1		Y2	2CY204B	E641A/2A	201

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = ESSPWR

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW. /SHT.	NOTES
1	E11A	480VAC MCC	MCC	G	ON	ON	OFF		5	H/S C/S	1	E6/1		E1	1PBE107A	E006/01	70
1	E11B	480VAC MCC	MCC	V	ON	ON	OFF		5	H/S C/S	1	E6/1		E11A	1PBE1120A	E006/01	70
1	E11C	480VAC MCC	MCC	V	ON	ON	OFF		5	H/S C/S	1	E6/1		E11A	1PBE1101A	E006/01	70
1	E11D	480VAC MCC	MCC	G	ON	ON	OFF		5	H/S C/S	1	E6/1		E11A	1PBE1132A	E006/01	70
1	E11E	480VAC MCC	MCC	DG	ON	ON	OFF		5	H/S C/S	1	E6/1		E11C	1PBE1150A	E006/01	70
1	E12A	480VAC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E6/1		E1	1PBE106A	E006/01	70
1	E12B	480VAC MCC	MCC	K	ON	ON	OFF		5	H/S C/S	1	E6/1		E1	1PBE109A	E006/01	70
1	E12C	480VAC MCC	MCC	BE	ON	ON	OFF		5	H/S C/S	1	E6/1		E12A	1PBE1202A	E006/01.05	70
1	E12D	480V AC MCC	MCC	BE	ON	ON	OFF		5	H/S C/S	1	E6/15		E12C	1PBE1210A	E6/5	202
1	E12E	480VAC MCC	MCC	B	ON	ON	OFF		5	H/S C/S	1	E6/1		E12A	1PBE1234A	E006/01	70
1	E12F	480VAC MCC	MCC	K	ON	ON	OFF		5	H/S C/S	1	E6/1		E12B	1PBE1273A	E006/01	70
1	E14	480VAC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E6/1		E1	1PBE110A	E006/01	70
1	E15	480VAC MCC	MCC	Y	ON	ON	OFF		5	H/S C/S	1	E6/1		E1	1PBE105A	E006/01	79
1	E16A	480V AC MCC	MCC	EE	ON	ON	OFF		5	H/S C/S	1	E4/1		E1	1PBE118A	E006/5	70, 71
1	E16B	480VAC MCC	MCC	DG	ON	ON	OFF		5	H/S C/S	1	E6/5		E16A	1PBE1609A	E006/05	72
2	F1	480 V AC MCC F1	SWGR	X	ON	ON	OFF		5	H/S C/S	1	E1/1		D1	2PAD12DFA	E1/2	70
														D1	2PAD12DFA	E1/2	70
														D2P	2PD2P07A	E640A/2A	70
														D2N	4PD2N07A	E640A/4A	70
														D2P	2CAD11DFA	E34B/16	70
														D2P	2CAD12DFA	E34B/16	70
														D2P	2CBDF11A	E37B/3	70
														D2P	2CBDF12A	E37B/3	70
														D2P	2PD2P07A	E640A/2A	70
2	F11A	480VAC MCC	MCC	DF	ON	ON	OFF		5	H/S C/S	1	E6/2		F1	2PBF115A	E006/02	70
2	F11B	480VAC MCC	MCC	V	ON	ON	OFF		5	H/S C/S	1	E6/2		F11A	2PBF1137A	E006/02	75
2	F11C	480VAC MCC	MCC	A	ON	ON	OFF		5	H/S C/S	1	E6/2		F11A	2PBF1143A	E006/02	70
2	F11D	480VAC MCC	MCC	G	ON	ON	OFF		5	H/S C/S	1	E6/2		F11A	2PBF1146A	E006/02	70
2	F11E	480VAC MCC	MCC	B	ON	ON	OFF		5	C/S	1	E6/2		F11A	2PBF1189A	E006/02	76
2	F12A	480VAC MCC	MCC	X	ON	ON	OFF		5	H/S C/S	1	E6/2		F1	2PBF114A	E006/02	70
2	F12B	480VAC MCC	MCC	J	ON	ON	OFF		5	H/S C/S	1	E6/2		F1	2PBF107A	E006/02	70
2	F12C	480VAC MCC	MCC	BF	ON	ON	OFF		5	H/S C/S	1	E6/2		F12A	2PBF1202A	E006/02	70
2	F12D	480VAC MCC	MCC	BF	ON	ON	OFF		5	H/S C/S	1	E6/2		F12C	2PBF1278A	E006/02.05	70
2	F14	480VAC MCC	MCC	X	ON	ON	OFF		5	H/S C/S	1	E6/2		F1	2PBF110A	E006/02	70
2	F15	480VAC MCC	MCC	X	ON	ON	OFF		5	H/S C/S	1	E6/2		F1	2PBF105A	E006/02	79
2	F16A	480V AC MCC	MCC	X	ON	ON	OFF		5	H/S C/S	1	E6/5		F1	2PBF118A	E37B/4	70
1/2	F7	480V AC MCC F7	MCC	II	ON	ON	OFF		5	H/S C/S	1	E1/1		D2	BPAD2DF7A	E34B/23	70
														DBN	BPDBN11A	E642A/4A	70
														DBP	BPDBP11A	E642A/2A	70
														F7	BCBF7A	E36B/16	78
														DBN	BCBDF7A	E36B/17	70
														DBP	BPDBP11A	E36B/17	70
														F7	BPBF707A	E36/18	70
														DBP	BCDBP30A	E642A/2B	151,5
														YBU	BCYBU41A	E643A/4	151,5
1	RC3601	DC CONT POWER RCP MONITOR	PNL	S	ON	ON	OFF		5	H/S C/S	1	E52B/49		D1P	1CD1P21A	E640A/1B	198,5
2	RC3602	DC CONTROL POWER RCP MONITOR	PNL	Q	ON	ON	OFF		5	H/S C/S	1	E52B/49		D2P	2CD2P21B	E640A/2B	198,5
1	RC3607	CONTROL POWER (TO CCCW001)	PNL	S	ON	ON	OFF		5	H/S C/S	1	E50B/28		D1P (DC)	1CD1P21D	E640A/1B	30,5
2	RC3608	CONTROL POWER (TO CCCW002)	PNL	Q	ON	ON	OFF		5	H/S C/S	1	E50B/28		D2P (DC)	2CD2P21C	E640A/2B	30,5
1	RC3701	DC CONTROL POWER TO CAC 1 OUT VLV	PNL	A	ON	ON	OFF		5	H/S C/S	1	E44B/24		D1P (DC)	1CD1P21A	E640A/1B	1,4,5
2	RC3702	DC CONTROL POWER TO CAC 2 OUT VLV	PNL	A	ON	ON	OFF		5	H/S C/S	1	E44B/24		D2P (DC)	2CD2P21A	E640B/2B	1,4,5
2	RC3705	CONT POWER RC3705 (LR3758)	PNL	A	ON	ON	OFF		5	H/S C/S	1	E50B/25		Y2 (AC)	2CY216A	E641A/2A	5
1	RC3706	CONTROL POWER (LOADS NON-SSD)	PNL	V	ON	OFF	ON		5	H/S C/S	1	E52B/71A		Y1	1CY117B	E641A/1A	5
1	RC3715	CONTROL POWER (SV WC1453)	PNL	U	ON	ON	OFF		5	H/S C/S	1	N/A		DAP	ACDAP28A	E642A/B	151,5
2	RC4606	DC CONT PWR (MU6406,RC4610A, PORV)	PNL	X	ON	ON	OFF		5	H/S C/S	1	E49B/70G		D2P (DC)	2PD2P12A	E640A/2A	134
														D2N	2PD2N17A	E640/4A	85
1	RC4801	DC CONT PWR TO RC4801 (MU6405, MU6407)	PNL	DG	ON	ON	OFF		5	H/S C/S	1	E49B/70F		D1P (DC)	1PD1P12A	E640A/1A	134
1	RC4802	CONT PWR (TO MUTK, SG DRN RLY)	PNL	V	ON	ON	OFF		5	H/S C/S	1	E49B/70F		DAN	APDAN24A	E642A/3B	135
1/2	XAC01	BUS TIE XFMR BACKFEED	XFMR	OS	ON	ON	OFF	BACKFEED C2/D2	5	H/S C/S	2	E1/1		C2	CABLE BUS	E22/1	70
1	XY1	CONSTANT VOLT TRANSFORMER (CVT CH 1)	XFMR	Y	ON	ON	OFF		5	H/S C/S	1	E7		E16A	1PBE1616A	E6/5	90
2	XY2	CONSTANT VOLT TRANSFORMER (CVT CH 2)	XFMR	X	ON	ON	OFF		5	H/S C/S	1	E7		F16A	2PBF1624A	E6/5	90
1	XY3	CONSTANT VOLT TRANSFORMER (CVT CH 3)	XFMR	Y	ON	ON	OFF		5	H/S C/S	1	E7		F16A	1PBE1617A	E6/5	90
2	XY4	CONSTANT VOLT TRANSFORMER (CVT CH 4)	XFMR	X	ON	ON	OFF		5	H/S C/S	1	E7		F16A	2PBF1623A	E6/5	90
1	Y1	120VAC DIST PNL	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YV1A	1PYV1A	E6/5	83
														XY1	1PYX1A	E6/5	90

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = ESSPWR

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	Y1A	120 VAC ESS INSTR DISTR PANEL	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YV1	1PYV1B	E200B	83
2	Y2	120V AC DIST PNL	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		XY1	1PX1A	E200B	90
2	Y2A	120VAC DIST PNL	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		XY2	2PX2A	E6/5	90
1	Y3	120VAC DIST PNL	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YV2	2PYV2A	E6/5	83
2	Y3602	CONTROL POWER (MU19 & MU32)	PNL	II	ON	ON	OFF		5	H/S C/S	1	E7		YV2	2PYV2B	E200B	83
2	Y4	120V AC DIST PNL	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		XY2	2PX2A	E200B	70
1	YAU	120VAC DIST PNL	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YV3	3PYV3A	E6/5	83
2	YBU	120VAC DIST PNL	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		XY3	3PX3A	E6/5	90
1	YE1	120VAC MCC	PNL	K	ON	ON	OFF		5	H/S C/S	1	E9		YBU	BPYBU05A	E643A/3	137,5
1	YE2	240/120VAC MCC	PNL	V	ON	ON	OFF		5	H/S C/S	1	E9		XY4	4PX4A	E6/5	90
2	YF1	120VAC MCC	PNL	J	ON	ON	OFF		5	H/S C/S	1	E9		YV4	4PYV4A	E6/5	83
2	YF2	240/120VAC MCC	PNL	DF	ON	ON	OFF		5	H/S C/S	1	E9		DC MCC 1	APD116A	E007	84
1	YRF1	RECTIFIER	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YVA	APYVAA	E7	84
2	YRF2	RECTIFIER	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		DC MCC 2	BPD216A	E007	84
1	YRF3	RECTIFIER	PNL	Y	ON	ON	OFF		5	H/S C/S	1	E7		YVB	BPYVBA	E7	84
2	YRF4	RECTIFIER	PNL	X	ON	ON	OFF		5	H/S C/S	1	E7		E12B	1PBE1259A	E009	70
1	YV1	125VDC INVERTER	INV	Y	ON	ON	OFF		5	H/S C/S	1	E7		E11B	1PBE1180A	E009	70
2	YV2	125VDC INVERTER	INV	X	ON	ON	OFF		5	H/S C/S	1	E7		F12B	2PBF1270A	E009	70
1	YV3	125VDC INVERTER	INV	Y	ON	ON	OFF		5	H/S C/S	1	E7		F11A	2PBF1101B	E009	70
2	YV4	125VDC INVERTER	INV	X	ON	ON	OFF		5	H/S C/S	1	E7		E12A	1PBE1220A	E6/1	90
1	YVA	125VDC INVERTER	INV	Y	ON	ON	OFF		5	H/S C/S	1	E7		E12A	2PBF1220A	E6/2	90
2	YVB	125VDC INVERTER	INV	X	ON	ON	OFF		5	H/S C/S	1	E7		E12A	1PBE1221A	E6/1	90
1	ZC6451	APP #2 CTRL VLV POSITION CONTROLLER	PNL	F	ON	ON	OFF		5	H/S C/S	1	E7		E12A	2PBF1221A	E6/2	90
2	ZC6452	APP #1 CTRL VLV POSITION CONTROLLER	PNL	E	ON	ON	OFF		5	H/S C/S	1	E7		D1P	1PYV1A	E007	90
1	ZC6459	MDPF CONTROL VLV POSITION CONTROLLER	PNL	II	ON	ON	OFF		5	H/S C/S	1	E7		YFR1	INTERNAL	E200B	90
2	ZC6460	MDPF CTRL VLV POSITION CONTROLLER	PNL	F	ON	ON	OFF		5	H/S C/S	1	E7		D2P	2PD2P03A	E007	90
														YVA	APYVAA	E7	90
														YFR2	INTERNAL	E200B	90
														D1N	3PYV3A	E007	90
														YFR3	INTERNAL	E200B	90
														D2N	4PD2N03A	E007	90
														YFR4	INTERNAL	E200B	90
														DC MCC 1	APD116A	E007	89
														DC MCC 2	BPD216A	E007	89
														D2P	2CD2P13A	E640A/2A	4
														D1P	1CD1P13A	E640A/1A	4
														D1N	1CD1N16A	E640A/3A	14
														D2P	2CD2P10A	E640A/2A	14

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = HPIS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	HP02A	HPI 2 DISCH ISO VLV	MOV	A	C	O	AS IS	HP02B	1,2	H/S C/S	1	M033A		F11C	2PBF1139A	E52B/26A,B	96
2	HP02B	HPI 2 DISCH ISO VLV	MOV	A	C	O	AS IS	HP02A	1,2	H/S C/S	1	M033A		F11C	2PBF1141A	E52B/26A,B	96
1	HP02C	HPI 1 DISCH ISO VLV	MOV	AB	C	O	AS IS	HP02D	1,2	H/S C/S	1	M033A		E11A	1PBE1103A	E52B/26A,B	96
1	HP02D	HPI 1 DISCH ISO VLV	MOV	AB	C	O	AS IS	HP02C	1,2	H/S C/S	1	M033A		E11A	1PBE1105A	E52B/26A,B	96
2	HP31	HPI PMP 2 RECIRC VLV	MOV	A	O	O	AS IS		1,2	H/S C/S	1	M033A		F11E	2PBF1194A	E52B/65	95
1	HP32	HPI PMP 1 RECIRC VLV	MOV	AB	O	O	AS IS		1,2	H/S C/S	1	M033A	SC SC	E12E	1PBE1286A	E52B/65	95
1	P197-1	HPI PMP 1 AC LO PUMP	PUMP	AB	OFF	ON	OFF		1,2	H/S C/S	1	M033A		E12E	1PBE1296A	E52B/63	93
1	P197-2	HPI PMP 1 DC LO PMP	PUMP	AB	OFF	ON	OFF	P197-1	1,2	H/S C/S	2	M033A		DC MCC 1	1PD106A	E52B/64	94
2	P198-1	HPI PMP 2 AC LO PMP	PUMP	A	OFF	ON	OFF		1,2	H/S C/S	1	M033A		F12A	2PBF1231A	E52B/63	93
2	P198-2	HPI PMP 2 DC LO PMP	PUMP	A	OFF	ON	OFF	P198-1	1,2	H/S C/S	2	M033A		DC MCC 2	2PD206A	E52B/64	94
1	P58-1	HPI PUMP 1	PUMP	AB	OFF	O/F	OFF		1,2	H/S C/S	1	M033A		C1	1PAC111A	E52B/05A	92
2	P58-2	HPI PUMP 2	PUMP	A	OFF	O/F	OFF		1,2	H/S C/S	1	M033A		D1	2PAD111A	E52B/05C	92

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = HVAC

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S,C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	C100	TRAV SCR AREA EXH FAN (B/U SW PUMP)	FAN	BD	O/F	O/F	OFF		5	H/S C/S	3	M026B		E12D	APBE1203A	E60B/51	118
2	C133	LV SWGR RM VENT FAN 2	FAN	EE	O/F	ON	OFF		5	H/S C/S	1	M027B		F12A	2PBF1204A	E60B/04B	100
1	C25-1	EDG RM 1 VENT FAN 1	FAN	K	O/F	ON	OFF		5	H/S C/S	1	M027B		E12B	1PBE1255A	E60B/02	98
1	C25-2	EDG RM 1 VENT FAN 2	FAN	K	O/F	ON	OFF		5	H/S C/S	1	M027B		E12B	1PBE1256A	E60B/02	98
2	C25-3	EDG RM 2 VENT FAN 3	FAN	J	O/F	ON	OFF		5	H/S C/S	1	M027B		F12B	2PBF1255A	E60B/02	98
2	C25-4	EDG RM 2 VENT FAN 4	FAN	J	O/F	ON	OFF		5	H/S C/S	1	M027B		F12B	2PBF1256A	E60B/02	98
1	C71-1	LV SWGR RM VENT FAN 1	FAN	Y	O/F	ON	OFF		5	H/S C/S	1	M027B		E12A	1PBE1217A	E60B/4B	100
1	C73-1	APP RM VENT FAN 1	FAN	E	O/F	ON	OFF		5	H/S C/S	1	M026A		E12A	1PBE1222A	E60B/09	101
2	C73-2	APP RM VENT FAN 2	FAN	F	O/F	ON	OFF		5	H/S C/S	1	M026A		F12A	2PBF1205A	E60B/09	101
1	C78-1	BATT RM VENT FAN 1	FAN	Y	O/F	ON	OFF		5	H/S C/S	1	M027B		E12B	1PBE1285A	E60B/22	103
2	C78-2	BATT RM VENT FAN 2	FAN	X	O/F	ON	OFF		5	H/S C/S	1	M027B		F12B	2PBF1259A	E60B/22	103
1	C99-1	SW PMP RM EXH FAN 1	FAN	BF	O/F	ON	OFF		5	H/S C/S	1	M026B		E12C	1PBE1212A	E60B/50	105
1	C99-2	SW PMP RM EXH FAN 2	FAN	BF	O/F	ON	OFF		5	H/S C/S	1	M026B		E12C	1PBE1205A	E60B/50A	105
2	C99-3	SW PMP RM EXH FAN 3	FAN	BF	O/F	ON	OFF		5	H/S C/S	1	M026B		F12D	2PBF1211A	E60B/50	105
2	C99-4	SW PMP RM EXH FAN 4	FAN	BF	O/F	ON	OFF		5	H/S C/S	1	M026B		F12D	2PBF1236A	E60B/50A	105
1	HV0531A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	O/C	O/C	OPEN		5	H/S C/S	3	M026B		L3012/E41B	ACMV0531A	E60B/52	118, 5
1	HV0532A	AIR IN LVR FOR B/U SW PUMP	DMPR	BD	O/C	O/C	OPEN		5	H/S C/S	3	M026B		L3012/E41B	ACMV0531B	E60B/52	118, 5
1	HV5305	LV SWGR RM FAN 1 DAMPER	DMPR	Y	O/C	O	AS IS		5	H/S C/S	1	M027B		YE1	1PYE104A	E60B/04C	106
1	HV5305A	LV SWGR RM 429 DAMPER	DMPR	Y	O/C	O	AS IS	HV5305B	5	H/S C/S	1	M027B		E12A	1PBE1240A	E60B/25	106
1	HV5305B	LV SWGR RM 429 DAMPER	DMPR	Y	O/C	O	AS IS	HV5305A	5	H/S C/S	1	M027B		E12A	1PBE1241A	E60B/25	106
2	HV5314	LV SWGR RM 428 DAMPER	DMPR	EE	O/C	O	AS IS		5	H/S C/S	1	M027B		YF1	2PYF104A	E60B/04C	107
2	HV5314A	LV SWGR RM 428 DAMPER	DMPR	X	O/C	O	AS IS		5	H/S C/S	1	M027B		F12A	2PBF1239A	E60B/26	107
1	HV5329A	EDG RM 1 DAMPER	DMPR	K	O/C	O	FC		5	H/S C/S	1	M027B		YE1	1PYE101A	E60B/18A	110
1	HV5329B	EDG RM 1 DAMPER	DMPR	K	O/C	O	FO		5	H/S C/S	1	M027B		C3615	1LGD109B	E64B/5	110
1	HV5329C	EDG RM 1 DAMPER	DMPR	K	O/C	O	FC		5	H/S C/S	1	M027B		YE1	1PYE102A	E60B/18A	110
2	HV5336A	EDG RM 2 DAMPER	DMPR	J	O/C	O	FC		5	H/S C/S	1	M027B		C3615	1LGD109C	E64B/5	110
2	HV5336B	EDG RM 2 DAMPER	DMPR	J	O/C	O	FO		5	H/S C/S	1	M027B		YE1	1PYE103A	E60B/18A	110
2	HV5336C	EDG ROOM 2 DAMPER	DMPR	J	O/C	O	FC		5	H/S C/S	1	M027B		C3615	1LGD109D	E64B/5	110
1	HV5597	BATT RM 429B ATM DMPR	DMPR	Y	O/C	O	AS IS		5	H/S C/S	1	M027B		YF1	2PYF101A	E60B/18A	111
2	HV5598	BATT RM 428A ATM DMPR	DMPR	X	O/C	O	AS IS		5	H/S C/S	1	M027B		C3616	2LGD209B	E64B/5	111
									5	H/S C/S	1	M027B		YF1	2PYF102A	E60B/18A	111
									5	H/S C/S	1	M027B		C3616	2LGD209C	E64B/5	111
									5	H/S C/S	1	M027B		YF1	2PYF103A	E60B/18A	111
									5	H/S C/S	1	M027B		C3616	2LGD209D	E64B/5	111
									5	H/S C/S	1	M027B		E12A	1PBE1208A	E60B/32	115
									5	H/S C/S	1	M027B		F12A	2PBF1210A	E60B/32	115

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = MSS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	ICS11A	MSL 2 ATM VENT VLV	SOV	DH	C	O/C	FC		3	H/S C/S	1	M007A		C5708 (AC)	2CVCS11AC	E46B/79A, B	124, 5
1	ICS11B	MSL 1 ATM VENT VLV	SOV	DH	C	O/C	FC		3	H/S C/S	1	M007A		C5792 (DC)	2CVCS11AE	E46B/79A, B	124, 5
2	MS100	MSL 2 ISO VLV	SOV	DH	O	C	FC		3	H/S C/S	1	M003A		C5708 (AC)	1CVCS11BC	E46B/78A, B	5, 124
														C5762A (DC)	1CVCS11BE	E46B/78A, B	5, 124
														C5792	2CFV100BG	E46B/1A	120, 5
														C5762A	1CFV100DH	E46B/1F	120, 5
														C5792	2CFV100AE	E46B/1D	120, 5
														C5706	2CFV100B	E46B/1B	120, 5
														C5762A	1CFV100EH	E46B/1E	120, 5
														C5762A	1CFV100EB	E64B/1E	120, 5
														C5792	2CRSCC12A	SF003B/10	120, 5
														C5792	2CRSCC14A	SF003B/10	120, 5
2	MS100-1	MSIV 2 WU ISO VLV	SOV	DH	C	C	FC		3	H/S C/S	1	M003A	SO	C5708 (AC)	2CV1001C	E46B/32A, B	121, 5
														C5792 (DC)	2CV1001F	E46B/32A, B	121, 5
														C5792	2CRSCC12A	SF003B/12	121, 5
														C5792	2CRSCC14A	SF003B/12	121, 5
1	MS101	MSL 1 ISO VLV	SOV	DH	O	C	FC		3	H/S C/S	1	M003A		C5706	1CFV101B	E46B/1B	120, 5
														C5762A	1CFV101BG	E46B/1A	120, 5
														C5762A	1CFV101AE	E46B/1D	120, 5
														C5792	2CFV101DH	E46B/1F	120, 5
														C5792	2CFV101EH	E40B/1E	120, 5
														C5792	2CFV101EB	E64B/1E	120, 5
														C5762A	1CRSCC11A	SF003B/9	120, 5
														C5762A	1CRSCC13A	SF003B/9	120, 5
1	MS101-1	MSIV 1 WU ISO VLV	SOV	DH	C	C	FC		3	H/S C/S	1	M003A	SO	C5708 (AC)	1CV1011C	E46B/32A, B	121, 5
														C5762A (DC)	1CV1011F	E46B/32A, B	121, 5
														C5762A	1CRSCC11A	SF003B/11	121, 5
														C5762A	1CRSCC13A	SF003B/11	121, 5
2	PSV-SP17A1	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A2	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A3	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A4	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A5	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A6	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A7	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A8	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
2	PSV-SP17A9	MSL 2 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11B	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B1	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B2	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B3	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B4	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B5	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B6	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B7	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B8	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197
1	PSV-SP17B9	MSL 1 SAFETY VALVE	SV	DH	C	C/O	FC	ICS11A	3	H/S C/S	2	M007A		N/A	N/A	N/A	197

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = MUPS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW. /SHT.	NOTES
1	E25-1	LETDOWN COOLER 1-1	CLR	D	FUNC	FUNC	N/A		2	H/S C/S	1	M031A		N/A	N/A	N/A	144
2	E25-2	LETDOWN COOLER 1-2	CLR	D	FUNC	FUNC	N/A		2	H/S C/S	1	M031A		N/A	N/A	N/A	144
1	E26-1	RCP SEAL COOLER 1	CLR	AB	FUNC	FUNC	N/A		2	H/S C/S	1	M031B		N/A	N/A	N/A	142
2	E26-2	RCP SEAL COOLER 2	CLR	AB	FUNC	FUNC	N/A		2	H/S C/S	1	M031B		N/A	N/A	N/A	142
1/2	F-35	PURIFICATION DEMIN FILTER 1-1	FLT	G	FUNC	FUNC	N/A		1,2	H/S C/S	1	M031A		N/A	N/A	N/A	146
1/2	F59-1	SEAL INJECT FLT 1-1	FLT	V	FUNC	FUNC	N/A		5	H/S C/S	1	M031B		N/A	N/A	N/A	138
1/2	F59-2	SEAL INJECT FLT 1-2	FLT	V	FUNC	FUNC	N/A		5	H/S C/S	1	M031B		N/A	N/A	N/A	138
1/2	HP1556	MU RECIRC TO BWST	MAN	AB	C	O	AS IS	HPI TRAIN 1&2	1,2	H/S C/S	1	M033A		N/A	N/A	N/A	97
1	HP26	HPI TO RCP SEALS	MAN	AB	C	O	AS IS		5	H/S C/S	1	M033A		N/A	N/A	N/A	149
2	HP27	HPI TO RCP SEALS	MAN	A	C	O	AS IS		5	H/S C/S	1	M033A		N/A	N/A	N/A	149
1/2	HP29	MU RECIRC TO BWST	MAN	AB	C	O	AS IS	HPI TRAIN 1&2	5	H/S C/S	1	M033A		N/A	N/A	N/A	134
1/2	MU01A	LETDOWN CLR 1 IN VLV	MOV	D	O/C	O/C	AS IS	MU02B, 2A, MU03	1,2	H/S C/S	1	M031A	F12A	2PBF1237A	E52B/17A	143, 211	
1/2	MU01B	LETDOWN CLR 2 IN VLV	MOV	D	O/C	O/C	AS IS	MU02B, 2A, MU03	1,2	H/S C/S	1	M031A	F12A	2PBF1238A	E52B/17A	143, 211	
1/2	MU02A	LETDOWN CLR OUT VLV	MOV	D	O	O/C	AS IS		1,2	H/S C/S	1	M031A	E11B	1PBE1171A	E49B/18	143, 211	
1/2	MU02B	LETDOWN CLR IN VLV	MOV	D	O	O/C	AS IS		1,2	H/S C/S	1	M031A	E11B	1PBE1172A	E49B/50A, B	143, 211	
1/2	MU03	RC LETDOWN ISO VLV	SOV	AB	O	O/C	FC		1,2	H/S C/S	1	M031A	C5717(AC)	2CVMU03C	E49B/22A	5, 143211	
													C5756D(DC)	2CVMU03E	E49B/22A	5, 143211	
													C5755C	2CSF1744A	E49B/22C	5, 143211	
													C5717	2CVMU03C	E49B/22A	5, 143211	
1/2	MU04	LETDOWN PRESS REDUCING VLV	MOV	AB	O	O	AS IS		1,2	H/S C/S	1	M031A	E22B	APBE2259A	E49B/17A, B	145	
1/2	MU10A	PURIFICATION DEMIN 1-1 IN VALVE	MOV	G	O/C	O	AS IS	MU10B	1,2	H/S C/S	1	M031A	E22B	APBE2262A	E49B/17A, B	147	
1/2	MU10B	PURIFICATION DEMIN 1-2 IN VALVE	MOV	G	O/C	O	AS IS	MU10A	1,2	H/S C/S	2	M031A	E22B	APBE2263A	E49B/17A, B	147	
1/2	MU11	RC LETDOWN DIVERTING VLV	MOV	G	O	C	AS IS		1,2	H/S C/S	1	M031A	E22B	APBE2278A	E49B/35A, B	148, 5	
													RC2825(AC)	APBE2278D	E49B/35A, B	148, 5	
1/2	MU182	SEAL RETURN TO MAKE UP TANK ISO VLV	MAN	G	O	C	N/A		2	H/S C/S	1	M031C	N/A	N/A	N/A	149	
1/2	MU19	SEAL INJ INLET ISO VLV	SOV	AB	O	O	FO		5	H/S C/S	1	M031C	SC	C5759C	BLNNI261D	E727A/8	137, 5
														C5759C	BLNNI264B	E727A/11	137, 5
														Y3602(AC)	BCY36218A	E506A/2	137, 5
1/2	MU1903	PURIFICATION DEMIN 1-3 IN VALVE	MOV	G	O/C	O	AS IS	MU10A	1,2	H/S C/S	2	M031A	E22B	APBE2271A	E49B/17A, B	147	
2	MU203	Recirc to Seal Return Stop Valve	MAN	AB	O	O/C	AS IS		2	H/S C/S	1	M031C		N/A	N/A	N/A	207
1	MU206	Recirc to Seal Return Stop Valve	MAN	AB	O	O/C	AS IS		2	H/S C/S	1	M031C		N/A	N/A	N/A	207
1/2	MU208	HPI TO RCP SEALS	MAN	AB	C	O	AS IS		5	H/S C/S	1	M031C		N/A	N/A	N/A	134
1/2	MU214	SEAL INJ INLET MANUAL ISO VALVE	MAN	AB	O	C	AS IS		5	H/S C/S	1	MU031C		N/A	N/A	N/A	137
1/2	MU216	SEAL INJ INLET ISO BYPASS VALVE	MAN	AB	C	O	AS IS		5	H/S C/S	1	M031C		N/A	N/A	N/A	137
2	MU32	RC MU ISO VLV	FCV	AB	O/C	O	FO	HPIS TRAIN 1&2	1,2	H/S C/S	1	M031C		N/A	N/A	N/A	137
														Y3602	BCY36217A	E632B/23	132, 212
														C5752F	BLCOF532A	E724	132, 212
														C5759C	BLNNI264D	E727A/11	132, 212
1/2	MU38	RCP SEAL RETURN ISO VLV	SOV	AB	O/C	O/C	FC		1,2	H/S C/S	1	M031B	B	C5717(AC)	2CVMU38C	E49B/19A-C	141, 5
														C5756D(DC)	2CVMU38E	E49B/19A-C	141, 5
2	MU3971	RC MU PUMP SUCT VLV	MOV	AB	C	O/C	AS IS	HPIS TRAIN 2	1,2	H/S C/S	1	M031C		F16A	2PBF1617D	E49B/70C, D	135
														RC4802	ACHILLOWAB	E49B/70E	135, 5
														RC4606	ACHILLOW2A	E49B/70G	135, 5
1/2	MU59A	RCP 2-1 SEAL RETURN VALVE	MOV	D	O	O	AS IS		5	H/S C/S	1	M031B	SC	E11B	1PBE1174A	E52B/30A, B	140
1/2	MU59B	RCP 2-2 SEAL RETURN VALVE	MOV	D	O	O	AS IS		5	H/S C/S	1	M031B	SC	E11B	1PBE1175A	E52B/30A, B	140
1/2	MU59C	RCP 1-1 SEAL RETURN VALVE	MOV	D	O	O	AS IS		5	H/S C/S	1	M031B	SC	E11B	1PBE1177A	E52B/30A, B	140
1/2	MU59D	RCP 1-2 SEAL RETURN VALVE	MOV	D	O	O	AS IS		5	H/S C/S	1	M031B	SC	E11B	1PBE1178A	E52B/30A, B	140
1	MU6405	RC MU PUMP SUCT VLV	MOV	AB	C	O/C	AS IS	HPIS TRAIN 1	1,2	H/S C/S	1	M031C		E11D	1PBE1127D	E49B/70A, B	135
														RC4802	ACHILLOWAB	E49B/70E	135, 5
														RC4801	ACHILLOW1A	E49B/70F	135, 5
2	MU6406	MU RECIRC ISO VLV	AOV	AB	O	O/C	FO	HPIS TRAIN 2	1,2	H/S C/S	1	M031C		RC4606(DC)	2CV6406D	E49B/69	134, 5
1	MU6407	MU RECIRC ISO VLV	AOV	AB	O	O/C	FO	HPIS TRAIN 1	1,2	H/S C/S	1	M031C		RC4801(DC)	1CV6407D	E49B/68	134
2	MU6408	MU CROSS CONNECT ISO VLV	MOV	AB	O	O	AS IS	HPIS TRAIN 2	1,2	H/S C/S	1	M031C	SC	F12A	2PBF1208F	E49B/63A, B	133
1	MU6409	MU CROSS CONNECT ISO VLV	MOV	AB	O	O	AS IS	HPIS TRAIN 1	1,2	H/S C/S	1	M031C	SC	E11D	1PBE1147F	E49B/64A, B	133
1	MU6419	MU DISCH VLV	MOV	AB	C	O	AS IS	HPIS TRAIN 1	1,2	H/S C/S	1	M031C		E12E	1PBE1295F	E49B/62A, B	132
2	MU6420	MU32 BYPASS VLV	MOV	AB	C	O	AS IS	HPIS, MU32	1,2	H/S C/S	2	M031C		F16A	2PBF1616F	E49B/65A, B	132
1	MU6421	MU CTMT ISO VLV	MOV	AB	C	O	AS IS	HPIS TRAIN 1	1,2	H/S C/S	1	M031C		E11D	1PBE1194E	E49B/67A, B	131
2	MU6422	MU CTMT ISO VLV	MOV	A	O	O	AS IS	HPIS TRAIN 2	1,2	H/S C/S	1	M031C	SC	F11A	2PBF1108E	E49B/66A, B	131
1/2	MU66A	RCP 2-1 SEAL INJ ISO VLV	AOV	AB	O	O	FC		5	H/S C/S	1	M031B	SC	C5717	2CVMU66AA	E52B/18A	5, 139
														C5755C	2CSF1748A	E52B/61	5, 139
														C5756D	2CVMU66AA	E52B/18A	5, 139
														C5717	1CVMU66BA	E52B/18A	5, 139
														C5762D	1CSF1736A	E52B/61	5, 139
														C5763C	1CVMU66BA	E52B/18A	5, 139
														C5717	1CVMU66CA	E52B/18A	5, 139
														C5762D	1CSF1737A	E52B/61	5, 139
1/2	MU66B	RCP 2-2 SEAL INJ ISO VLV	AOV	AB	O	O	FC		5	H/S C/S	1	M031B	SC				
1/2	MU66C	RCP 1-1 SEAL INJ ISO VLV	AOV	AB	O	O	FC		5	H/S C/S	1	M031B	SC				

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A SAFE SHUTDOWN COMPONENT LIST

SYSTEM = MUPS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- -MANCE GOALS	REQUIRED FOR H/S,C/S	PRIOR- -ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1/2	MU66D	RCP 1-2 SEAL INJ ISO VLV	AOV	AB	O	O	FC		5	H/S C/S	1	M031B	SC	C5763C C5717 C5755D C5756C	1CVMU66CA 2CVMU66DA 2CSF1749A 2CVMU66DA	E52B/18A E52B/18A E52B/61 E52B/18A	5, 139 5, 139 5, 139 5, 139
1/2	MU97	SEAL RETURN TO CLEAN WASTE TK ISO VLV	MAN	G	C	O	N/A		2	H/S C/S	1	M031A		N/A	N/A	N/A	149
1	P-371B	MUP 1 MAIN LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 1	1,2	H/S C/S	1	NONE		E11D	APBE1191A	E49B/04	128
1	P-371C	MUP 1 AUX LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS, P-371B	1,2	H/S C/S	2	NONE		DC MCC 1	APD117A	E49B/24	129
1	P-371D	MUP 1 AUX GEAR LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 1	1,2	H/S C/S	1	NONE		E11D	APBE1192A	E49B/25	130
2	P-372B	MUP 2 MAIN LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 2	1,2	H/S C/S	1	NONE		F11C	BPBF1167A	E49B/04	128
2	P-372C	MUP 2 AUX LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS, P-372B	1,2	H/S C/S	2	NONE		DC MCC 2	BDP217A	E49B/24	129
2	P-372D	MUP 2 AUX GEAR LO PUMP	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 2	1,2	H/S C/S	1	NONE		F11C	BPBF1168A	E49B/25	130
1	P37-1	MU PUMP 1	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 1	1,2	H/S C/S	1	M031C		C1	1PAC105A	E49B/01A	127
1	P37-2	MU PUMP 2	PUMP	AB	O/F	ON	OFF	HPIS TRAIN 2	1,2	H/S C/S	1	M031C		D1	2PAD105A	E49B/01A	127
1	P371A	MU PMP 1 MAIN GEAR LO PMP	PUMP	AB	O/F	O	OFF	P371D	1,2	H/S C/S	1	N/A		N/A	N/A	N/A	129A
2	P372A	MU PMP 2 MAIN GEAR LO PMP	PUMP	AB	O/F	O	OFF	P372D	1,2	H/S C/S	1	N/A		N/A	N/A	N/A	129A
1/2	T-4	MAKE-UP TANK	TANK	G	FUNC	FUNC	N/A	BWST	1,2	H/S C/S	1	M031C		N/A	N/A	N/A	136
1/2	T15-1	CLEAN WASTE RECEIVER TANK 1-1	TANK	A	FUNC	FUNC	N/A	T15-2	2	H/S C/S	1	M037C		N/A	N/A	N/A	148
1/2	T15-2	CLEAN WASTE RECEIVER TANK 1-2	TANK	A	FUNC	FUNC	N/A	T15-1	2	H/S C/S	1	M037C		N/A	N/A	N/A	148
1/2	T5-1	MIXED BED PURIF DEMINERALIZER 1-1	TANK	G	FUNC	FUNC	N/A	T5-2	2	H/S C/S	1	M031A		N/A	N/A	N/A	147
1/2	T5-2	MIXED BED PURIF DEMINERALIZER 1-2	TANK	G	FUNC	FUNC	N/A	T5-1	2	H/S C/S	1	M031A		N/A	N/A	N/A	147
1/2	T5-3	CATION BED PURIF DEMINERALIZER 1-3	TANK	G	FUNC	FUNC	N/A	T5-1, 2	2	H/S C/S	1	M031A		N/A	N/A	N/A	147
1/2	WC119	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	A	C	O	AS IS		2	H/S C/S	1	M037C		N/A	N/A	N/A	149
1/2	WC120	CLEAN WASTE TANKS INLET LINE ISO VLV	MAN	G	C	O	AS IS		2	H/S C/S	1	M037C		N/A	N/A	N/A	149
1/2	WC1453	CLEAN WST PRI DEMIN IN VLV	SOV	G	O	C	FC		2	H/S C/S	1	M037C	SC	RC3715(DC)	ACV1453A	E56B/07	151, 5
1/2	WC1743	CLEAN WST RCVA TK IN VLV	SOV	A	O	O	FC		2	H/S C/S	1	M037C		C1702(AC)	ACV1453A	E56B/07	151, 5
1/2	WC1747	CLEAN WST RCVR TK IN VLV	SOV	A	O	O	FC		2	H/S C/S	1	M037C	SC	RC1761	ACV1743A	E56B/11	151, 5
1/2	WC3560	DEGASIFIER BYPASS VLV	SOV	G	C	O	FO		2	H/S C/S	1	M037D		C1702	ACV1743A	E56B/11	151, 5
														C1702(AC)	BCV1747A	E56B/11	151, 5
														RC1761(DC)	BCV1747A	E56B/11	151, 5
														C5718(AC)	ACV3560A	E56B/36	151, 5
														RC3715(DC)	ACV3560A	E56B/36	151, 5

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = NI

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S,C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	NI-5874A	SOURCE RANGE IND	IND	FF	ON	ON	OFF	NI-5874A	4	H/S C/S	2	M030B		C4808 C5799	1LNF5874E 1CY107AA	E1049/1 E1010	153 153
1	NI-5874C	LOCAL SOURCE RANGE IND	IND	DG	ON	ON	OFF		4	H/S C/S	1	M030B		C4808	1LNF5874E	E1049/1	153
2	NI-5875A	SOURCE RANGE IND	IND	FF	ON	ON	OFF		4	H/S C/S	2	M030B		C4602 C5798	2LNF5875E 2CY207AA	E1049/3 E1009	153 153
2	NI-NI1	SOURCE RANGE IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	NONE		C5755E	2LRPSA03A	E731A/03	153
1	NI-NI2	SOURCE RANGE IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	NONE		C5762E	1LRPSB03A	E730A/03	153

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = NNI

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	FI-MU31	MUP TRAIN 2 FLOW IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M031C		C5703	2LLMU31A	J-125/3	163
2	FI-MU34	MUP TRAIN 2 FLOW IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M031C		C5755G	2LLMU31B	E728A/12	163
1	FI6425	RC MU FLOW-HI RANGE	IND	FF	ON	ON	OFF		4	H/S C/S	1	M031C		C5709	2LLMU34A	J-125/3	163
1	FI6435	RC MU FLOW-LOW RANGE	IND	FF	ON	ON	OFF		4	H/S C/S	1	M031C		C5755G	2LLMU34A	E728A/13	163
2	FYI-HP03A	HPI FLOW INDICATION	IND	FF	ON	ON	OFF		1,2	H/S C/S	1	M033A		C5763A	1LL6425A	E631B/12	163
2	FYI-HP03A1	HPI FLOW IND. (ASP)	IND	R	ON	ON	OFF		1,2	H/S C/S	1	M033A		C5708	1CY112C	E574/8	163
2	FYI-HP03B	HPI FLOW INDICATION	IND	FF	ON	ON	OFF		1,2	H/S C/S	1	M033A		C5763A	1LL6435A	E631B/12	163
2	FYI-HP03B1	HPI FLOW IND (ASP)	IND	R	ON	ON	OFF		1,2	H/S C/S	1	M033A		C5708	1CY112C	E574/8	163
1	FYI-HP03C	HPI FLOW INDICATION	IND	FF	ON	ON	OFF		1,2	H/S C/S	1	M033A		C3629	2LHP03AA	E734A/06	162
1	FYI-HP03C1	HPI FLOW IND (ASP)	IND	R	ON	ON	OFF		1,2	H/S C/S	1	M033A		C5716	2CY211A	J-102/36	162
1	FYI-HP03D	HPI FLOW INDICATION	IND	FF	ON	ON	OFF		1,2	H/S C/S	1	M033A		C3629	2LHP03AA	E734A/6	162
1	FYI-HP03D1	HPI FLOW IND (ASP)	IND	R	ON	ON	OFF		1,2	H/S C/S	1	M033A		C3630	2LHP03AA	J-102/36	162
1	LI-RC14-1	PRZR LEVEL IND (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030A		C3629	2LHP03BA	E734A/06	162
2	LI-RC14-2	PRZR LEVEL IND (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030A		C5716	2CY211A	J-102/35	162
1	LI-RC14-3	PRZR LEVEL IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C3629	2LHP03BA	E734A/6	162
2	LI-RC14-4	PRZR LEVEL IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C3630	2LHP03BA	J-102/35	162
2	LI-SP09A1	SG1-2 START-UP LEVEL IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M007A		C3629	2LHP03BA	E734A/6	162
2	LI-SP09A3	SG1-2 START-UP LEVEL IND (ASP)	IND	R	ON	ON	OFF	LI-SP09A1	4	H/S C/S	2	M007A		C3630	2LHP03BA	J-102/35	162
2	LI-SP09A8	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	ON	ON	OFF	LI-SP09A1	4	H/S C/S	2	M007A		C3628	1LHP03CA	E734A/07	162
2	LI-SP09A8A	SG1-2 START-UP LEVEL IND (C5710)	IND	FF	ON	ON	OFF	LI-SP09A1	4	H/S C/S	2	M007A		C5716	1CY112A	J-102/33	162
2	LI-SP09A9	SG1-2 START-UP LEVEL IND (C5792A)	IND	FF	ON	ON	OFF	LI-SP09A1	4	H/S C/S	2	M007A		C3628	1LHP03CA	E734A/7	162
1	LI-SP09B1	SG1-1 START-UP LEVEL IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M007A		C3630	2LRC141C	E734A/3	154
1	LI-SP09B3	SG1-1 START-UP PRESS IND (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M007A		C3630	2LRC141B	E734A/3	154
1	LI-SP09B8	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	ON	ON	OFF	LI-SP09B1,3	4	H/S C/S	2	M007A		C3630	2LRC141C	E734A/3	154
1	LI-SP09B8A	SG1-1 START-UP LEVEL IND (C5708)	IND	FF	ON	ON	OFF	LI-SP09B1,3	4	H/S C/S	2	M007A		C3630	2LSP09A3C	E734A/2	157
1	LI-SP09B9	SG1-1 START-UP LEVEL IND (C5761A)	IND	FF	ON	ON	OFF	LI-SP09B1,3	4	H/S C/S	2	M007A		C3630	2LSP09A3C	E734A/2	157
2	LRS-RC14	PRZR LEVEL RECORDER	REC	FF	ON	ON	OFF	LI-RC14-1-4	4	H/S C/S	2	M030A		C5792A	2LSGLT21A	E65B/03A	158
2	PI-6365A	RCS LOOP 2 EXTENDED RANGE PRESS	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C5792A	2LSGLT21E	E65B/3A	157
2	PI-6365A1	RCS LOOP2 EXTENDED RANGE PRESS (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030B		C5709	2CY211C	E574/8	157
1	PI-6365B	RCS LOOP 1 EXTENDED RANGE PRESS	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C5792A	2LSGLT41A	E65B/03A	158
1	PI-6365B1	RCS LOOP 1 EXTENDED RANGE PRESS (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030B		C3630	1LSP09B3C	E734A/02	157
2	PI-RC2A3	RCS LOOP 2 PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C3630	1LSP09B3C	E734A/02	157
2	PI-RC2A4	RCS LOOP 2 PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C5761A	1LSGLT11B	E65B/03	158
1	PI-RC2B3	RCS LOOP 1 PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C5761A	1LSGLT11E	E65B/03	157
1	PI-RC2B4	RCS LOOP 1 PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030B		C5708	1CY112C	E574/8	157
2	PI-SP12A	SG1-2 OUTLET PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M007A		C5761A	1LSGLT31B	E65B/03	158
2	PI-SP12A1	SG1-2 OUTLET PRESS IND (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M007A		C5759B	BLNNI153D	E726A/7	155
2	PI-SP12A1-A	SG1-2 OUTLET PRESS IND	IND	FF	ON	ON	OFF	PI-SP12A	4	H/S C/S	2	M007A		C3629	2LP6365AB	E734A/8	159
1	PI-SP12B	SG1-1 OUTLET PRESS IND	IND	FF	ON	ON	OFF		4	H/S C/S	1	M007A		C5798	2CY207AA	E1009	159
1	PI-SP12B1	SG1-1 OUTLET PRESS IND (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M007A		C3629	2LP6365AB	E734A/8	159
1	PI-SP12B2	SG1-1 OUTLET PRESS IND	IND	FF	ON	ON	OFF	PI-SP12B-1	4	H/S C/S	2	M007A		C3628	1LP6365BB	E734A/8	159
2	TE-RC3A6	RCS LOOP 2 HOT LEG TEMP (RM 314)	TE	D	ON	ON	OFF		4	H/S C/S	1	M030A		C5799	1CY107AA	E1010	159
1	TE-RC3B5	RCS LOOP 1 HOT LEG TEMP (RM 303)	TE	D	ON	ON	OFF		4	H/S C/S	1	M030A		C3628	1LP6365BB	E734A/8	159

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = NNI

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
2	TE-RC4A2	RCS LOOP 2 COLD LEG TEMP (RM 314)	TE	D	ON	ON	OFF		4	H/S C/S	1	M030A		C5759B	BLNNI154Y	E726A/08	104
1	TE-RC4B3	RCS LOOP 1 COLD LEG TEMP (RM 303)	TE	D	ON	ON	OFF		4	H/S C/S	1	M030A		C5760D	ALNNI833A	E728A/5	104
2	TI-RC3A4	RCS LOOP 2 HOT LEG TEMP (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030B		C5755E	2LRPSA07B	E731A/07	161
2	TI-RC3A5	RCS LOOP 2 HOT LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5763A	1LTRC3A5C	E905A/03	161
														C5799	1CY107AA	E1010	161
2	TI-RC3A6	RCS LOOP 2 HOT LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5755G	2LTRC3A6C	E905A/03	161
														C5798	2CY207AA	E1009	161
1	TI-RC3B2	RCS LOOP 1 HOT LEG TEMP (ASP)	IND	R	ON	ON	OFF		4	H/S C/S	1	M030A		C5762F	1LRPSB07B	E730A/07	161
1	TI-RC3B5	RCS LOOP 1 HOT LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5763A	1LTRC3B5C	E905A/03	161
														C5799	1CY107AA	E1010	161
1	TI-RC3B6	RCS LOOP 1 HOT LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5755G	2LTRC3B6C	E905A/03	161
														C5798	2CY207AA	E1009	161
2	TI-RC4A2	RCS LOOP 2 COLD LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5759B	BLNNI154B	E726A/08	160
														C5798	2CY207AA	E1009	160
2	TI-RC4A4	RCS LOOP 2 COLD LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5760D	ALNNI833A	E728A/05	160
														C5799	1CY107AA	E1010	160
1	TI-RC4B2	RCS LOOP 1 COLD LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5759B	BLNNI154D	E726A/08	160
														C5798	2CY207AA	E1009	160
1	TI-RC4B4	RCS LOOP 1 COLD LEG TEMP	IND	FF	ON	ON	OFF		4	H/S C/S	1	M030A		C5760D	ALNNI833C	E728A/05	160
														C5799	1CY107AA	E1010	160

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT
 PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5-SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = RCS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR- -MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR- -ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1	RC11	PORV BLOCK VLV	MOV	D	O	O/C	AS IS		2	H/S C/S	1	M030A	H/L	E16B	1PBE1602A	E52B/12	174
2	RC13A	RCS CODE SAFETY VALVE	SV	D	C	C	CLOSED		3	H/S C/S	1	M030A		N/A	N/A	N/A	206
1	RC13B	RCS CODE SAFETY VALVE	SV	D	C	C	CLOSED		3	H/S C/S	1	M030A		N/A	N/A	N/A	206
1/2	RC147	PRESSURIZER VENT HEADER CONTROL VLV	MAN	D	O	C	AS IS	RC200	2	H/S C/S	3	M030A	B	N/A	N/A	N/A	204
2	RC200	PZR SMPL CTMT VNT HDR VLV	MOV	D	C	O/C	AS IS		2	H/S C/S	1	M030A	H/L SO	F12A	2PBF1285J	E52B/11	172
2	RC239A	PZR VAPOR SMPL VLV	MOV	D	C	O/C	AS IS	RC200	2	H/S C/S	1	M030A	H/L SO	F11A	2PBF1126A	E52B/14A	172
2	RC239B	PZR LIQUID SMPL VLV	MOV	D	C	C	AS IS	RC200	2	H/S C/S	2	M030A	H/L SO	F11A	2PBF1127A	E52B/14	172
2	RC2A	PZR PORV	SOV	D	C	O/C	FC		2	H/S C/S	1	M030A	H/L SO	C5705 (AC)	BCVRC2D	E52B/13	171, 5
														RC4606 (DC)	2CVRC2J	E52B/13	171
1	RC4608A	SG 1 HI-PT VENT VLV	SOV	D	C	C	FC	RC4608B	2	H/S C/S	1	M030A	H/L SO	C5799 (AC)	1CV4608AC	E52B/71A	175, 5
														RC3706 (DC)	1CV4608AD	E52B/71A	175, 5
1	RC4608B	SG 1 HI-PT VENT VLV	SOV	D	C	C	FC	RC4608A	2	H/S C/S	2	M030A	H/L SO	C5799 (AC)	1CV4608BC	E52B/71B	175, 5
2	RC4610A	SG 2 HI-PT VENT VLV	SOV	D	C	C	FC	RC4610B	2	H/S C/S	1	M030A	H/L SO	C5798 (AC)	2CV4610AC	E52B/71A	175, 5
														RC4606 (DC)	2CV4610AD	E52B/71A	175, 5
2	RC4610B	SG 2 HI-PT VENT VLV	SOV	D	C	C	FC	RC4610A	2	H/S C/S	2	M030A	H/L SO	C5798 (AC)	2CV4610BC	E52B/71B	175, 5
2	RC4632	COLD LEG SG1-2 SMPL VLV	SOV	D	C	C	FC	RC200	2	H/S C/S	2	M030A	H/L SO	C5705 (AC)	2CV4632D	E56B/47B	172, 5
														RC4606 (DC)	2CV4632D	E56B/47B	5, 172

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = SFAS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIORITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW./SHT.	NOTES
1/2	C5755D	SFAS CH.2 LOGIC PANEL	PNL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	2CY207A	E641A/2A	198
1/2	C5762D	SFAS CH.1 LOGIC PANEL	PNL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	1CY107A	E641A/1A	198
															Y1	E641A/1A	198
1/2	C5763D	SFAS CH.3 LOGIC PANEL	PNL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	3CY307A	E641A /3A	198
															D1P	E640A/1A	198
															Y3	E641A/3A	198
															4CY407A	E641A /4A	198
1/2	C5765D	SFAS CH.4 LOGIC PANEL	PNL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	1CLY6453A	E44B/24	198
1/2	HIS6453	SG Auto Essen Level Control	HIS	A	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	2CLY6454A	E44B/24	198
1/2	HIS6454	SG Auto Essen Level Control	HIS	A	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1601A	E762	198
1/2	LI1525A	BWST Level Indicator	LI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1651A	E762	198
1/2	LI1525B	BWST Level Indicator	LI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1603A	E762	198
1/2	LI1525C	BWST Level Indicator	LI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1653A	E762	198
1/2	LI1525D	BWST Level Indicator	LI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF5811A	E762	198
1/2	LSL1525A1	BWST Level Switch	LSL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF5821A	E762	198
1/2	LSL1525B1	BWST Level Switch	LSL	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	1LSFLT11A	E762, 637B	198
1/2	LT1525A	BWST Level Transmitter	LT	AC	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	2LSFLT21A	E762, 637B	198
1/2	LT1525B	BWST Level Transmitter	LT	AC	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	3LSFLT31A	E762, 637B	198
1/2	LT1525C	BWST Level Transmitter	LT	AC	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	4LSFLT41A	E762, 637B	198
1/2	LT1525D	BWST Level Transmitter	LT	AC	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1601A	E762	198
1/2	PI2000	CTMT Vessel Press Indicator	PI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1651A	E762	198
1/2	PI2001	CTMT Vessel Press Indicator	PI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1603A	E762	198
1/2	PI2002	CTMT Vessel Press Indicator	PI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1653A	E762	198
1/2	PI2003	CTMT Vessel Press Indicator	PI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF5812A	E762	198
1/2	PSH2000B	CTMT Vessel Press Switch	PSH	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF5822A	E762	198
1/2	PSH2001B	CTMT Vessel Press Switch	PSH	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	1LSFPT12A	E762	198
1/2	PT2000	CTMT Vessel Press Xmtr	PT	V	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	2LSFPT22A	E762	198
1/2	PT2001	CTMT Vessel Press Xmtr	PT	EE	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	3LSFPT32A	E762	198
1/2	PT2002	CTMT Vessel Press Xmtr	PT	EE	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	4LSFPT42A	E762	198
1/2	PT2003	CTMT Vessel Press Xmtr	PT	CC	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1601A	E762	198
1/2	RI2004	CTMT Vessel Radiation Ind	RI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1651A	E762	198
1/2	RI2005	CTMT Vessel Radiation Ind	RI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF1603A	E762	198
1/2	RI2006	CTMT Vessel Radiation Ind	RI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF1653A	E762	198
1/2	RI2007	CTMT Vessel Radiation Ind	RI	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	ALSF5813A	E762	198
1/2	RSH2004A	CTMT Vessel Radiation Sw	RSH2	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A	BLSF5823A	E762	198
1/2	RSH2005A	CTMT Vessel Radiation Sw	RSH	FF	OFF	OFF	OFF		5	H/S C/S	1	N/A	SA	N/A			

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS
APPENDIX A
SAFE SHUTDOWN COMPONENT LIST

SYSTEM = SFRCS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFOR-MANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW. /SHT.	NOTES
1/2	HIS100B	LOGIC CH 2 TRIP BLOCK/PERMISSIVE	HIS	FF	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5792A	2CRC2121A	E65B/6A	198
1/2	HIS100C	LOGIC CH 4 TRIP BLOCK/PERMISSIVE	HIS	FF	ON	ON	OFF		5	H/S C/S	1	E18/2	SA	C5792A	2CRC2141A	E65B/6A	198
1/2	HIS101B	LOGIC CH 1 TRIP BLOCK/PERMISSIVE	HIS	FF	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5761A	1CRC2111A	E65B/6	198
1/2	HIS101C	LOGIC CH 3 TRIP BLOCK/PERMISSIVE	HIS	FF	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5761A	1CRC2131A	E65B/6	198
1	HIS3869B	BLOCK CIRCUIT AF3869 (AFP-1 TO SG-2)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/1	N/A		1CRSCC21A	SF003B/3	198
														N/A	1CRSCC23A	SF003B/3	198
1	HIS3870B	BLOCK CIRCUIT AF3870 (AFP-1 TO SG-1)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/1	N/A		2CRSCC21A	SF003B/5	198
														N/A	2CRSCC23A	SF003B/5	198
2	HIS3871B	BLOCK CIRCUIT AF3871 (AFP-2 TO SG-1)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/2	N/A		2CRSCC22A	SF003B/4	198
														N/A	2CRSCC24A	SF003B/4	198
2	HIS3872B	BLOCK CIRCUIT AF3872 (AFP-2 TO SG-2)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/2	SA		2CRSCC22A	SF003B/6	198
														N/A	2CRSCC24A	SF003B/6	198
2	HIS603B	BLOCK CIRCUIT MS603 (SG-2 DRAIN STOP)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/2	SA		2CRSCC12A	SF003B/20	198
														N/A	2CRSCC14A	SF003B/20	198
1	HIS611B	BLOCK CIRCUIT MS611 (SG-1 DRAIN STOP)	HIS	FF	OFF	OFF	ON		3	H/S C/S	1	E18/1	SA		1CRSCC11A	SF003B/19	198
														N/A	1CRSCC13A	SF003B/19	198
1	HIS6401	CH 1/3 MANUAL START APPT-1 C5707	HIS	FF	OFF	ON	OFF		5	H/S C/S	1	E18/1	SA		1CRSCC11A	E65B/8	198
														N/A	1CRSCC13A	E65B/8	198
2	HIS6402	CH 2/4 MANUAL START APPT-2 C5707	HIS	FF	OFF	ON	OFF		5	H/S C/S	1	E18/2	SA		1CRSCC12A	E65B/8A	198
														N/A	1CRSCC14A	E65B/8A	198
1	HIS6403	CH 1/3 MAN STRT APPT-1 & ISOL SG-1 C57	HIS	FF	OFF	ON	OFF		5	H/S C/S	1	E18/1	SA		1CRSCC11A	E65B/8	198
														N/A	1CRSCC13A	E65B/8	198
2	HIS6404	CH 2/4 MAN STRT APPT-2 & ISOL SG-2 C57	HIS	FF	OFF	ON	OFF		5	H/S C/S	1	E18/2	SA		2CRSCC12A	E65B/8A	198
														N/A	1CRSCC14A	E65B/8A	198
1/2	LLTSP9A6	SG2 CH 1 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5761A	1LSGLT11A	E65B/3	198
1/2	LLTSP9A7	SG2 CH 3 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5761A	1LSGLT13A	E65B/3	198
1/2	LLTSP9A8	SG2 CH 2 SU LEVEL XMTR	LLT	D	ON	ON	OFF		4	H/S C/S	1	E18/1	SA	C5792A	2LSGLT21A	E65B/3A	198
1/2	LLTSP9A9	SG2 CH 4 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/2	SA	C5792A	2LSGLT41A	E65B3A	198
1/2	LLTSP9B6	SG1 CH 2 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/2	SA	C5792A	2LSGLT21B	E65B/3A	198
1/2	LLTSP9B7	SG1 CH 4 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/2	SA	C5792A	2LSGLT41B	E65B/3A	198
1/2	LLTSP9B8	SG1 CH 1 SU LEVEL XMTR	LLT	D	ON	ON	OFF		4	H/S C/S	1	E18/1	SA	C5761A	1LSGLT11B	E65B/3	198
1/2	LLTSP9B9	SG1 CH 3 SU LEVEL XMTR	LLT	D	ON	ON	OFF		5	H/S C/S	1	E18/1	SA	C5761A	1LSGLT13B	E65B/3	198
1/2	PDS2685A	CH 2 MN FW < SG2 PRESSURE SWITCH	PDS	II	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21B	E65B/2A	198
1/2	PDS2685B	CH 4 MN FW < SG2 PRESSURE SWITCH	PDS	II	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41B	E65B/2A	198
1/2	PDS2685C	CH 1 MN FW < SG2 PRESSURE SWITCH	PDS	II	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11C	E65B/2	198
1/2	PDS2685D	CH 3 MN FW < SG2 PRESSURE SWITCH	PDS	II	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11B	E65B/2	198
1/2	PDS2686A	CH 1 MN FW < SG1 PRESSURE SWITCH	PDS	AB	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD31B	E65B/2	198
1/2	PDS2686B	CH 3 MN FW < SG1 PRESSURE SWITCH	PDS	AB	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21C	E65B/2A	198
1/2	PDS2686C	CH 2 MN FW < SG1 PRESSURE SWITCH	PDS	AB	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41C	E65B/2A	198
1/2	PDS2686D	CH 4 MN FW < SG1 PRESSURE SWITCH	PDS	AB	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21E	E65B/1A	198
1/2	PS3687A	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21I	E65B/1A	198
1/2	PS3687C	CH 2 MN STM LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41E	E65B/1A	198
1/2	PS3687E	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41I	E65B/1A	198
1/2	PS3687G	CH 4 MN STM LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41I	E65B/1A	198
1/2	PS3687K	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21G	E65B/1A	198
1/2	PS3687L	CH 2 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD21H	E65B/1A	198
1/2	PS3687M	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41G	E65B/1A	198
1/2	PS3687N	CH 4 MN STM LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/2	SA	N/A	2CRCPD41H	E65B/1A	198
1/2	PS3689B	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11E	E65B/1	198
1/2	PS3689D	CH 1 MS LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11J	E65B/1	198
1/2	PS3689F	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD31E	E65B/1	198
1/2	PS3689H	CH 3 MS LINE 2 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD31J	E65B/1	198
1/2	PS3689K	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11G	E65B/1	198
1/2	PS3689L	CH 1 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD11H	E65B/1	198
1/2	PS3689M	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD31G	E65B/1	198
1/2	PS3689N	CH 3 MS LINE 1 PRESSURE SWITCH	PS	EE	C	C	OPEN		5	H/S C/S	1	E18/1	SA	N/A	1CRCPD31H	E65B/1	198
1/2	RCPM1	CH 1 RCP MONITOR RELAY CONTACT	RCPM	D	C	C	OPEN		5	H/S C/S	1	E18/1	SA	RC3601	1CRCPM11B	E65B/4	198, 5
1/2	RCPM2	CH 2 RCP MONITOR RELAY CONTACT	RCPM	D	C	C	OPEN		5	H/S C/S	1	E18/2	SA	RC3602	2CRCPM21B	E65B/4A	198, 5
1/2	RCPM3	CH 3 RCP MONITOR RELAY CONTACT	RCPM	D	C	C	OPEN		5	H/S C/S	1	E18/1	SA	RC3603	1CRCPM31B	E65B/4	198, 5
1/2	RCPM4	CH 4 RCP MONITOR RELAY CONTACT	RCPM	D	C	C	OPEN		5	H/S C/S	1	E18/2	SA	RC3604	2CRCPM41B	E65B/4A	198, 5

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

FIRE HAZARDS ANALYSIS

APPENDIX A

SAFE SHUTDOWN COMPONENT LIST

SYSTEM = SWS

TRAIN	COMPONENT	DESCRIPTION	TYPE	LOC. OF COMP.	NORMAL POSITION	SHUTDOWN POSITION	FAILED POSIT.	THIS COMPONENT ALTERNATE SHUTDOWN FOR	PERFORMANCE GOALS	REQUIRED FOR H/S, C/S	PRIOR-ITY	P&ID 1-LINE	HIGH/LOW, SPURIOUS, BOUNDARY	POWER SUPPLY	CIRCUIT SCHEME	ELEMENTARY WIRING DRAW. /SHT.	NOTES
1/2	P180	BACKUP SW PUMP	PUMP	BD	OFF	ON	OFF	SWS TRAIN 1&2	5	H/S C/S	3	M041A		C2	APCA201A	E48B/37D	180
1	P3-1	SW PUMP 1	PUMP	BF	O/F	ON	OFF		5	H/S C/S	1	M041A		C1	1PAC107A	E48B/06A	179
2	P3-2	SW PUMP 2	PUMP	BF	O/F	ON	OFF		5	H/S C/S	1	M041A		D1	2PAD107A	E48B/06C	179
1/2	P3-3	SW PUMP 3	PUMP	BF	O/F	ON	OFF	P3-1, P3-2	5	H/S C/S	1	M041A		C1	1PAC109A	E48B/11A	179
														D1	2PAD109A	E48B/11E	179
														C1	1CACD4D	E48B/11C	179
														D1P	1PD1P08A	E640A/1A	179
														D1	2CAC05D	E48B/4C	179
														D2P	2PD2P08A	E640A/2A	179
1	SW1356	CAC 1 OUT ISO VLV	SOV	A	O/C	O	FO		5	H/S C/S	1	M041C		C5716 (AC)	1CV1356D	E48B/13	184, 5
2	SW1357	CAC 2 OUT ISO VLV	SOV	A	O/C	O	FO		5	H/S C/S	1	M041C		C5716 (AC)	2CV1357D	E48B/13	184, 5
1/2	SW1358	CAC 3 OUT ISO VLV	SOV	A	O/C	O	FO		5	H/S C/S	1	M041C		C5716 (AC)	1CV1358AL	E48B/33C	184, 5
														C5716 (AC)	2CV1358BL	E48B/33C	184, 5
														RC3701 (DC)	1CV1358AG	E48B/33C	184, 5
														RC3702 (DC)	2CV1358BB	E48B/33C	184, 5
1	SW1366	CAC 1 IN ISO VLV	MOV	A	O	O	AS IS		5	H/S C/S	1	M041C	SC	EL1C	1PBEL142A	E48B/12	184
2	SW1367	CAC 2 IN ISO VLV	MOV	A	O	O	AS IS		5	H/S C/S	1	M041C	SC	F12A	2PBFI223A	E48B/12	184
1/2	SW1368	CAC 3 IN ISO VLV	MOV	A	O	O	AS IS		5	H/S C/S	1	M041C		EL2A	1PBEL1207A	E48B/14A,C	184
														F12A	2PBFI224A	E48B/14B,C	184
1	SW1382	APP 1 SUCT VLV FROM SW	MOV	E	C	O/C	AS IS		5	C/S	1	M041C		EL2A	1PBEL1218A	E48B/06A,B	186
														EL2A	1CPS4928C	E48B/18	186
														CD12A1	1CSD03A	E48B/6B	186
2	SW1383	APP 2 SUCT VLV FROM SW	MOV	A	C	O/C	AS IS		5	H/S C/S	1	M041C		F11C	2PBFI177A	E48B/06A,B	186
														F11C	2CPS4929C	E48B/18	186
														CD11C	2CSD04A	E48B/6B	186
2	SW1395	TPCW HX IN HEADER ISO VLV	MOV	BG	O/C	C	AS IS		5	H/S C/S	1	M041A		F12C	2PBFI277A	E48B/09A,B	188
1	SW1399	TPCW HX IN HEADER ISO VLV	MOV	BG	O/C	C	AS IS		5	H/S C/S	1	M041A		EL2C	1PBEL1277A	E48B/09A,B	188
1	SW1424	SW FROM CC HX 1 ISO VLV	SOV	T	O/C	O	FO		5	H/S C/S	1	M041B		C5716 (AC)	1CV1424D	E48B/30	5, 183
1/2	SW1429	SW FROM CC HX 3 ISO VLV	SOV	T	O/C	O	FO		5	H/S C/S	1	M041B		C5763D (DC)	1CV1424G	E48B/30	5, 183
														C5716 (AC)	1CV1429C	E48B/31A	5, 183
														C5716 (AC)	2CV1429C	E48B/31A	5, 183
														C5756D (DC)	2CV1429B	E48B/31A	5, 183
														C5756D (DC)	3CV1429B	E48B/31A	5, 183
														C5763C (DC)	3CV1429A	E48B/31A	5, 183
														C5763D (DC)	1CV1429B	E48B/31A	5, 183
2	SW1434	SW FROM CC HX 2 ISO VLV	SOV	T	O/C	O	FO		5	H/S C/S	1	M041B		C5716 (AC)	2CV1434D	E48B/30	5, 183
														C5756D (DC)	2CV1434G	E48B/30	5, 183
1	SW2927	CTRM EVS COND UNIT IN VLV	MOV	HH	C	O	AS IS		5	H/S C/S	1	M041B		EL2A	1PBEL1232A	E48B/27	182
2	SW2928	CTRM EVS COND UNIT IN VLV	MOV	HH	C	O	AS IS		5	H/S C/S	1	M041B		F11A	2PBFI132A	E48B/27	182
1	SW2929	SW TO INT STRU VLV	MOV	BG	O/C	O	AS IS	SW2930, 31, 32	5	H/S C/S	2	M041C		EL2C	1PBEL1281A	E48B/28	187
2	SW2930	SW TO INT FOREBAY VLV	MOV	BG	O/C	O	AS IS	SW2929, 31, 32	5	H/S C/S	2	M041C		F12C	2PBFI281A	E48B/26	187
1	SW2931	SW TO CLG TOWER MU VLV	MOV	BG	O/C	O	AS IS	SW2929, 30, 32	5	H/S C/S	2	M041C		EL2C	1PBEL1282A	E48B/28	187
2	SW2932	SW TO COLLECT BASIN VLV	MOV	BG	O/C	O	AS IS	SW2929, 30, 31	5	H/S C/S	2	M041C		F12C	2PBFI282A	E48B/28	187
1/2	SW325	CAC 3 SW OUT ISO VLV	MAN	A	C	C	N/A		5	H/S C/S	1	M041C	B	N/A	N/A	N/A	184
1	SW45	TPCW HX ISO VLV	MAN	BG	O	C	N/A	SW1399	5	H/S C/S	2	M041A	B	N/A	N/A	N/A	189
2	SW46	TPCW HX ISO VLV	MAN	BG	O	C	N/A	SW1395	5	H/S C/S	2	M041A	B	N/A	N/A	N/A	189
1	SW54	TPCW HX1 OUTLET	MAN	II	O	C	N/A	SW1395, SW1399	5	H/S C/S	2	M041A	B	N/A	N/A	N/A	189
2	SW55	TPCW HX2 OUTLET	MAN	II	O	C	N/A	SW1395, SW1399	5	H/S C/S	2	M041A	B	N/A	N/A	N/A	189
1/2	SW56	TPCW HX3 OUTLET	MAN	II	O	C	N/A	SW1395, SW1399	5	H/S C/S	2	M041A	B	N/A	N/A	N/A	189

PRIORITY = 1- REQUIRED MINIMUM COMPONENT FOR SHUTDOWN, 2-BACKUP COMPONENT, 3-ALTERNATE SHUTDOWN COMPONENT

PERFORMANCE GOALS = 1- REACTIVITY CONTROL, 2- REACTOR COOLANT MAKEUP, 3- REACTOR HEAT REMOVAL, 4- PROCESS MONITORING, 5- SUPPORT FUNCTIONS

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1. Valve AF3869 (AF3871) provides AFW from AFW Pump 1-1 (1-2) to SG1-2 (SG1-1). This normally closed valve should be closed when Train 1(2) of AFW is being utilized. The concern is if this valve spuriously opens, thereby diverting AFW to the opposite SG. However, the decay heat removal function is satisfied by feeding either or both steam generators.

The AFW pump capacity is such that even if this valve did spuriously open, and thereby divert flow to Train 2(1), adequate Auxiliary Feedwater supply would still be available to maintain the inventory in SG1-1(SG1-2) (Reference 2.3.H (6.8)). However, spurious opening of this valve is a concern from the point of view of inadvertently overfilling the opposite SG, thereby potentially overcooling the RCS and/or introducing water into the AFW steam supply. Any spurious open signal can be blocked or the valve can be reclosed locally. LY6453(6454) SG Auto Essential Level Control Circuits 1544B/24 are included in the database for conservatism only. Auto control on high or low level achieves SSD; therefore, control power from RC3701 is not required.

2. Valves AF608 (AF599) are required to remain open to provide AFW to one SG1-1(SG1-2). In addition, flow to SG1-1(SG1-2) requires 1 of the following valves to be open: AF3870 or FW6398(AF3872 or FW6460).
3. Valve ICS038B(ICS038A) is required to remain open to provide Main Steam to the AFW Pump Turbine 1(2), thereby assuring the operability of AFW Pump 1(2). AFW flow is controlled by modulating AFWP Flow Control Valve AF6452(AF6451). If level control is unavailable, speed control can be used to regulate AFW flow. The power supplies and control circuits for ICS038B(ICS038A) can be operated from either the MCR or ASP.
4. Valve AF6452(AF6451) is a DC modulating solenoid level control valve which fails open for SSD. AC is required to modulate to control the amount of AFW entering SG1-1(SG1-2) in automatic level control, but manual control is from either the Control Room or ASP is assumed for Safe Shutdown. (See also Note 3, speed control is a backup means of regulating AFW flow). Control Panel C3645 (C4625) provides AC control power.
5. The power supply to the scheme is not needed for Safe Shutdown. For example, E1, F1, and F7 MCC breakers fail [AS IS] upon loss of control power, (See E34B/16 and E34B/23A). Also, control power is not needed if control circuits fail in the SSD position. Control power for indicating lights is included for conservatism, but is not essential for Safe Shutdown.
6. Normally closed Valve MS106(MS107) opens to provide steam to AFW Turbine Driven Pump 1-1(1-2) whenever SFRCS is initiated. Manual actions ensure a steam supply to both AFPTs after manual initiation or a false isolation condition as a result of shorts on complimentary steam pressure channels (See E18 sht 1).

Flow can also be established using the manual cross-connect valves MS728 and MS733 along with MS106A (MS107A).

7. Normally open Valve MS106A(MS107A) provides steam to AFW Pump Turbine 1-1(1-2) from SG1-2(SG1-1). IF MS106A(MS107A) remains open or spuriously reopens while

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feeding only SG1-1, SG1-2 could boil dry. MS106A (MS107A) can be manually closed if feed using only one AFPT is desired.

From Reference 2.3.H (6.8), it has been determined that the steam output from SG1-2(SG1-1) is such that the output capacity is sufficient to run the AFW Pump Turbine 2(1) even if the valve was open thereby diverting some steam to Train 1(2) (this is conservatively assuming the case where ICS038B and MS5889A(ICS038A and MS5889B) is open and cannot be closed). Boiling dry 1 SG will not prevent natural circulation in the other SG.

8. Valve MS5889A(MS5889B) is required to open to admit steam to AFW Pump Turbine 2 (1). SV5889A(SV5889B) fails open on SFRCS signal, or loss of power or air supply.
9. Turbine Driven Pump P14-1(P14-2) is required to be operable for operation of AFWS Train 1(2). See also Note 7, both AFPTs start on manual initiation or SFRCS (Trip 5RCMP monitor on Loss of Offsite Power. See E18).
10. Motor Driven Feedwater Pump P241 provides an alternate supply of AFW in the event the Turbine Driven Feedwater Pumps are unavailable.
11. Pump P242-1 is required to be available to support MDFP operation.
12. Pump P242-2 supports operation of the MDFP. This pump is strictly mechanical in nature.
13. NUMBER NOT USED
14. Valve FW6459(FW6460) is required to modulate to control the amount of AFW supplied to SG1-1(SG1-2) by the MDFP.
15. MDFP Seal Water Coolers E183, E184-1 and E184-2 are required to be functional to cool the MDFP Seals. These are strictly passive mechanical components.
16. Condensate Storage Tank T31-1(T31-2) is required to be functional to supply AFW to AFW Pump 1(2).
17. Only 1 CAC unit fan (i.e. C1-1 or C1-2) and its associated cooling coil (i.e. E37-1 or E37-2) is required operable, when shutting down, to maintain containment temperature within operational limits for the instruments in Containment (References 2.3.H (6.8 and 6.10)). Only 1 CAC unit is assured in the Appendix R evaluation in the event of a fire anywhere in the plant. C1-3 is not relied upon for shutdown.
18. Valves CC1467 (Train 1) and CC1469 (Train 2) are required to open for plant Shutdown in order to provide cooling for the Decay Heat Removal Coolers. Note that these valves are required to achieve Cold Shutdown (valves are solenoid operated).
19. Valves CC1471 (Train 1) and CC1474 (Train 2) are required open for plant Shutdown in the case of a Loss Of Offsite Power (LOOP) to provide cooling to the EDG Jackets. These are normally open manual valves.

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20. Valve CC1495 provides CCW to a nonessential portion of the CCWS. This valve needs to be assured closed for Shutdown in order to preclude substantial flow diversion that should ordinarily go to the essential portion of the CCWS and the Containment Header.
21. Valve CC2645(CC2649) is required to be open to provide CCW return flow from the Seal Return Coolers and is required for Safe Shutdown.
22. Valve CC5095(CC5096) is normally open when Train 1(2) is being utilized during normal operation. It is required open for Safe Shutdown to provide cooling to MUPS Letdown and Seal Return Coolers. Manual actions are required in some fire areas.
23. CCW Heat Exchangers E22-1, E22-2 and E22-3 and CCW Surge Tank T-12 are required to be functional to support operation of the CCWS. These components are passive mechanical components.
24. Of the 3 centrifugal CCW pumps (i.e. P43-1, P43-2 and P43-3), 1 is normally operating, 1 is in standby and 1 is an installed spare. Each pump is rated at 7860 gpm (at 65 psi). The minimum flow requirements of the CCW Pump is 1000 gpm. The Appendix R review considers that only 1 CCW loop is necessary to achieve Cold Shutdown.

The 2 component cooling loops are interconnected downstream from the heat exchangers to essentially form an open loop supply header for loads that are nonessential. One CCW pump is adequate to provide cooling water to the respective essential header and the nonessential containment header only. For this reason, valve CC1495 needs to be assured closed to avoid CCW flow diversion to the other nonessential headers.

25. Valve CC1460 is only required open for those instances where the Makeup System is accredited for Safe Shutdown. This valve supplies CCW to the Makeup Pump Gear and Pump Lube Oil Coolers. Manual action may be required if air and power are unavailable. Manual valves are installed from the essential CCWS headers to the respective pump coolers and effectively bypass CC1460.
26. CCW Inlet Isolation Valves CC1411A and B and Outlet Isolation Valves CC1407A and B are required to remain open to provide cooling to the RCP Seals and Makeup Letdown Coolers.
27. Valves CC5097 (Train 1) and CC5098 (Train 2) provide Return Flow from the Makeup Letdown Coolers. Manual actions are required in some fire areas.
28. Valves CC1409 and CC1410 provide Inlet CCW Flow to the RCS Letdown Coolers (E25-1, 2). These valves are required to remain operable when letting down from the RCS.
29. NUMBER NOT USED
30. Normally energized Flow Switch Relays FIS1422D, FIS1427C, FIS1427D, and FIS1432C monitor flow from the CCW pump and on sustained low flow or loss of control

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power starts the backup pump. On low flow, these switches also provide a signal to open the respective standby CCWS Header (Valves CC2645, CC5095, CC5097, CC2649, CC5096, CC5098).

31. Valves CF01A and B are required to be closed when going to Cold Shutdown at an RCS Pressure of approximately 600 psig, to preclude dumping water from the Core Flood Tank into the RCS. The Core Flooding System is only required to operate in the event of a Loss Of Coolant Accident (LOCA).
32. Fans C21-1 (Train 1) and C21-2 (Train 2) supply cool air from the emergency condensing units to the Control Room. The fans are required operable to maintain proper temperature for Control Room instrumentation and habitability.
33. A/C Units S33-1 (Train 1) and S33-2 (Train 2) (water-cooled) cool the incoming air to provide suitable temperatures for the Control Room.
34. A/C Units S33-1(S33-2) Refrigerant Isolation Valve SV4823A (SV4827A) provide refrigerant to the Service Water cooled condensing heat exchanger and are required for proper operation of S33-1(S33-2).
35. NUMBER NOT USED
36. NUMBER NOT USED
37. The CREVS Cooling Coils E106-1 and E106-2 are required functional to assure proper operation of CREVS. These are passive mechanical components and will not be affected by a fire (except in Fire Area HH, where the components are located).
38. The CREVS Filter Banks F22-1 and F22-2 filter the air entering the Control Room. These are passive components and will not be affected by a fire outside of the Control Room (except in Fire Area HH, where the components are located).
39. Pumps P56-1 (P56-2) is required not to spuriously start in the case that the associated CTMT Spray Valve CS1530 (CS1531) spuriously opens. Procedures call for tripping the pump.
40. Valves CS1530 and CS1531 are required not to spuriously open only if the associated CTMT Spray Pump also spuriously starts. The spurious opening of 1 of these valves concurrent with the spurious starting of the associated pump would spray unwanted water into CTMT, thereby potentially causing primary system depressurization.
41. Pumps P42-1 (Train 1) and P42-2 (Train 2) provide flow for the DHR/LPI mode. The pumps are required to be operable to achieve cold shutdown.
42. Valves DH01A (Train 2) and DH01B (Train 1) are normally open and are required to remain open to allow injection into the RCS during decay heat removal.
43. Valves DH07A (Train 2) and DH07B (Train 1) provide BWST inventory to the DHR/LPI pumps in the LPI mode, and the HPI System for high pressure RCS Injection. Since

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Valves DH7A and DH7B are normally depowered, spurious actuation of these valves is not a concern.

44. Valves DH09A (Train 2) and DH09B (Train 1) provide suction from the Containment Sump in the event of a LOCA when BWST inventory is depleted. The valves are normally closed and are required closed for Safe Shutdown, from an Appendix R standpoint, so that BWST inventory is not diverted to the CTMT sump in the event of spurious opening of the valves. If this were to occur, the Containment Emergency Sump could fill up with water to the point that water could come in contact with the Reactor Vessel and thereby possible cause thermal shock. Since Valves DH9A and DH9B are normally depowered, spurious actuation of these is not a concern.
45. Valves DH11 and DH12 are required to be open when the system is operated in the DHR mode. Alternatively, Manual Valves DH21 and DH23 may be opened locally to bypass these valves. (Since valves DH11 and DH12 are normally depowered, spurious actuation of these valves is not a concern).
46. Valves DH1517 (Train 1) and DH1518 (Train 2) are required to be open in the DHR mode to provide suction for the DHR Pumps from the Reactor Coolant System.
47. Valves DH2733 (Train 1) and DH2734 (Train 2) are required to be open to provide BWST inventory to the RCS in the LPI mode.
48. Valves DH13A (Train 2) and DH13B (Train 1) provide the capability to bypass the DHR Coolers. They are normally closed. The inability to open these valves is not a concern. Spurious actuation of the valves is the only concern.
49. Valves DH14A (Train 2) and DH14B (Train 1) are normally open and are required to be open to provide flow through the DHR Coolers when in the DHR mode.
50. NUMBER NOT USED
51. Valves DH63 (Train 2) and DH64 (Train 1) are required to be open when in the "Piggyback" mode of the HPI System. They are required to be closed when in the DHR or LPI mode. Note that the "Piggyback" mode of HPIS, is not accredited for Safe Shutdown.
52. Valves DH2735 and DH2736 are located in the Decay Heat Removal System Pressurizer auxiliary spray flowline. Spurious simultaneous opening of both valves when Reactor Coolant system pressure is less than the operating pressure of the High Pressure Injection /Decay Heat Removal System could result in loss of Reactor Coolant System pressure control. Spurious opening of these valves is not a concern when Reactor Coolant System pressure is greater than the operating pressure of the High Pressure Injection/Decay Heat Removal System because Check Valve RC51 would prevent backflow.
53. NUMBER NOT USED

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- 54. DHR Coolers E27-1 and E27-2 are required functional to support proper operation of the DHRS. These components are passive mechanical components.
- 55. The BWST (T-10) is required functional to provide a source of borated water for the DHR/LPI, HPI and Makeup Systems.
- 56. Pumps P195-1 (Train 1) and P195-2 (Train 2) are only required to fill the EDG Day Tanks on low Day Tank level. However, each Day Tank has a 20-hour capacity of fuel oil to supply the EDG. Therefore, these pumps would only be required after 20-hours of EDG operation.
- 57. Valves DA2987, DA2988, DA2989 and DA2994, as well as valves DA60, DA61, DA62, and DA63, are air-actuated valves controlled by air from valves DA1147A/B (Train 1) and DA1148A/B (Train 2).

Since these valves have no electrical interface, they are included on the SSCL (Appendix A) but are not identified in Appendix B.

- 58. Either the engine-driven Fuel Oil Pumps [P205-1 (Train 1) and P205-2 (Train 2)] or the motor-driven Fuel Oil Pumps [P201-1 (Train 1) and P201-2 (Train 2)] can supply fuel oil to the engine. The DC motor-driven fuel oil pumps are a backup to the engine-driven pumps. The engine-driven pumps are integral to the EDG.
- 59. Valve DA1147A, B (Train 1) and DA1148A, B (Train 2) are required to open to introduce air from the EDG Starting Air Receivers to the Air Starting Motors.
- 60. EDGs K5-1 and K5-2 are required operable to power the essential electrical distribution system in the event of a Loss Of Offsite Power (LOOP).
- 61. EDG Day Tanks T46-1 and T46-2 supply fuel to the EDGs. They are required to remain functional. No remote indication is available to monitor EDG Day Tank level. However, the day tanks are sized to provide fuel for at least 20-hours. Level indication is provided locally.
- 62. The fuel oil in EDG Fuel Oil Storage Tanks T153-1 and T153-2 is required only after the Day Tank level is depleted. However, a backup supply of fuel maybe provided via an Emergency Fill Connection.
- 63. Each receiver (i.e. T86-1 through -4) has the capacity to provide 5 starts without recharging. They are strictly passive mechanical components. They are required to remain unaffected by a fire.
- 64. The air starting motors are used to start the EDG's and are strictly mechanical devices. There are 8 of these motors, 1 set of 2 per air receiver.
- 65. NUMBER NOT USED
- 66. NUMBER NOT USED

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- 67. NUMBER NOT USED
- 68. The EDG Jacket Water Pumps (P148-1A/B and P148-2A/B), Scavenger Pumps (P264-1 and 2) Piston Cooling Pumps (P265-1 and 2), and Main Lube Oil Pumps (P150-1 and 2) are all engine-driven. There is no electrical interface with these components.
- 69. EDG Jacket Cooling Water Heat Exchangers E10-1 (Train 1) and E10-2 (Train 2) are required to remain functional to cool the EDGs. These are passive mechanical components.
- 70. The Essential Electrical Distribution System is required to be operable to power Safe Shutdown equipment in the event of Loss Of Offsite Power. Essential MCCs not identified on the SSCL do not power Safe Shutdown equipment.
- 71. MCC E16A is the power supply for MCC E16B.
- 72. MCC E16B is the power supply for the PORV Block Valve RC 11.
- 73. Control Room Control Panel C5717 provides power to various valve position indicating lights including the Main Steam Line Isolation Valves.
- 74. Control Room Bench Boards C5705 and C5706 provide power to various (local and Control Room) valve position indicating lights. Control Room Bench Board C5708, C5709 and C5716 provide power to various (local and Control Room) valve position indicating lights and process monitoring indicators (Dixson's).
- 75. MCC F11B is required operable to permit closing of Valve MS107A.
- 76. MCC F11E is a power supply for Cold Shutdown components only.
- 77. MCC F71 is the power supply for the MDFP Auxiliary Lube Oil Pump P242-1.
- 78. 480 VAC Switchgear F7 powers MCC F71.
- 79. MCCs E15 and F15 are power supplies for MCC EF15.
- 80. Diesel Control Panels C3615 (Train 1) and C3616 (Train 2) provide control power to various components required for EDG operation.
- 81. 4160V Switchgear C2 is required to be operable to power the Backup Service Water Pump in those fire areas where credit is taken for the pump.
- 82. 4160V Switchgear D2 powers the Motor Driven Feedwater Pump (P-241).
- 83. 120V AC Distribution Panels Y3 and Y4 are alternates for Panels Y1 and Y2, respectively.
- 84. 120V AC Distribution Panels YAU and YBU Power Non-Nuclear Instrumentation.

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85. 125V DC Distribution panel D2N powers the PORV (RC2A).
86. 125V DC Distribution Panels DBN, DBP and DAN, DAP provide control power to 4160V Switchgear D2 and C2, respectively, which are needed to backfeed diesel power to non-essential loads (See notes 81 & 82).
87. The Station Batteries (1P, 1N, 2P and 2N) are required operable to assure a backup DC supply in the event that the Battery Chargers are not available to supply the DC MCCs. USAR Section 8.3.2 demonstrates that the batteries can supply essential and non-essential loads for at least 1-hour, after which a charger or backfeeding can supply Safe Shutdown loads.
88. The Battery Chargers maintain the DC MCCs powered from 480V AC Essential Power.
89. Inverters YVA and YVB convert 125V DC to 120V AC for Distribution Panels YAU and YBU.
90. Inverters YV1, YV2, YV3 and YV4 convert 125V DC to 120V AC for use by Essential 120V AC Instrumentation Distribution Panels. FCR 86-0272 added constant voltage transformers (CVT). Transfer of the essential distribution panels to the CVT is automatic for Y1, Y1A, Y2, Y2A, Y3 and Y4.
91. NUMBER NOT USED
92. Pumps P58-1 (Train 1) and P58-2 (Train 2) provide high pressure injection into the RCS. They are required operable to achieve and maintain Hot Standby and to go to Cold Shutdown.
93. Pumps P197-1 (Train 1) and P198-1 (Train 2) provide a constant circulation of lube oil for the HPI Pumps. They are required operable to achieve and maintain Hot Standby and to go to Cold Shutdown.
94. DC Lube Oil Pumps P197-2 (Train 1) and P198-2 (Train 2) provide lube oil to the HPI Pumps in the event that the AC Lube Oil Pumps fail. These pumps are alternates for the AC Lube Oil Pumps.
95. Valves HP31 (Train 2) and HP32 (Train 1) are required open when their respective HPI Pump is operating to provide an HPI Flow recirculation path until RCS Pressure is low enough to promote HPIS Flow into the RCS.
96. Valves HP02A and B (HP02C and D) are required open to provide injection into the RCS via HPIS Train 2(1).
97. Valve HP1556 is required to be open to provide a recirculation path to the BWST for the Makeup pumps. Its internals have been permanently removed to protect it from an electrical fault potentially closing the valve. Valve HP1556 must be manually opened locally before Makeup Pump recirculation to the BWST can be established.

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- 98. The EDG Rooms are each ventilated by 2 half-capacity supply air fans [C25-1 and 2 (Train 1) and C25-3 and 4 (Train 2)] to ensure a proper environment for EDG operation. The supply fans in the EDG Rooms are interlocked so that the fans operate any time the EDG is operating. The air from the EDG Rooms is discharged directly to the atmosphere through the roof.
- 99. NUMBER NOT USED
- 100. 100% capacity Vent Fans C71-1 (Train 1) and C-133 (Train 2) ensure adequate cooling of the L.V. Switchgear Rooms following a Loss Of Offsite Power (LOOP) or failure of the normal ventilation system. Credit is not being taken for the normal ventilation system since Appendix R requires the loss of offsite power condition be assumed possible.
- 101. One 100% capacity "Q" exhaust fan per pump room [(C73-1 Train 1) and C73-2 (Train 2)] provides the necessary room cooling to ensure the proper operation of AFWS.
- 102. NUMBER NOT USED
- 103. Fans C78-1 (Train 1) and C78-2 (Train 2) are required to be operable following a Loss Of Offsite Power and high room temperature, or failure of the normal, non-Q exhaust fans. Since Appendix R requires that the case of Loss Of Offsite Power be considered, these fans are determined to be required for Shutdown. No credit is being taken for the non-Q ventilation system.
- 104. TE-RC3A6, TE-RC4A2, TE-RC4B3 and TE-RC3B5 provide local RCS Hot and Cold Leg temperature monitoring. By use of portable temperature indicators (TI-5503 and TI-5504). Connections are in Room 303 (Train 1) and Room 314 (Train 2).
- 105. Two 50% capacity fans per Channel [C99-1 and 2 (Train 1) and C99-3 and 4 (Train 2)] provide adequate Service Water Pump Room ventilation to maintain room temperature within design limits while shutting down.
- 106. Dampers HV5305A and B, and HV5305 are required to be open for Shutdown to assure adequate Low Voltage Switchgear Room 429 ventilation.
- 107. Dampers HV5314 and HV5314A are required to be open for Shutdown to assure adequate Low Voltage Switchgear Room 428 ventilation.
- 108. NUMBER NOT USED
- 109. NUMBER NOT USED
- 110. Dampers HV5329A, B and C are required to be open to ensure air supply and exhaust for the EDG Room Vent Fan 1.
- 111. Dampers HV5336A, B and C are required to be open to ensure air supply and exhaust for the EDG Room Vent Fan 2.

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- 112. NUMBER NOT USED
- 113. NUMBER NOT USED
- 114. NUMBER NOT USED
- 115. Battery Room Dampers HV5597 (Train 1 - Room 429B) and HV5598 (Train 2 - Room 428A) are required to be open to assure proper Battery Room "Q" ventilation.
- 116. NUMBER NOT USED
- 117. NUMBER NOT USED
- 118. Fan C100 and Ventilation Louvers HV0531A and HV0532A provide ventilation for the Backup Service Water Pump. HV0531A and HV0532A are spring loaded to open on loss of power.
- 119. NUMBER NOT USED
- 120. The Main Steam Isolation Valve MS101 (MS100) is required to shut to isolate SG1-1(SG1-2) and thereby provide steam to the AFW Pump Turbine 1(2). SV101C, F (SV100C, F) are not required for Safe Shutdown, MS101(100) will close on spring pressure.
- 121. Valve MS101-1(MS100-1) bypass MS101(MS100) and is opened during Startup to heat the downstream of the Main Steam System before MS101(MS100) is opened. During normal operation the valve is closed. The concern is that if the valve was to spuriously open that steam would be diverted to the condenser instead of the AFW Pump Turbine. The valve is located on a 2-inch line which could potentially divert significant steam if the valve was too inadvertently open. Since this is a spurious open concern only, control power is not required for SSD.
- 122. NUMBER NOT USED
- 123. NUMBER NOT USED
- 124. Valve ICS11B(ICS11A) provides secondary side pressure control and RCS cooldown capability when the condenser is not available. This valve is required operable to achieve Hot Standby and for going to Cold Shutdown, but fails closed on loss of air or the SV-ICS11A(B) and local manual operation is required by Procedure DB-OP-02501, "Serious Station Fire".
- 125. NUMBER NOT USED
- 126. NUMBER NOT USED
- 127. Pumps P37-1 (Train 1) and P37-2 (Train 2) provide injection into the RCS to maintain RCS inventory. One is normally in operation while the other is on standby. They are

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rated for normal RCS Pressures. Note that this system is utilized as a backup to the HPI System in those fire areas where both trains of HPIS may be lost due to a fire.

- 128. Pumps P-371B (Train 1) and P-372B (Train 2) provide lube oil to their respective Makeup Pump when in operation.
- 129. Pumps P-371C (Train 1) and P-372C (Train 2) are redundant to the Main Lube Oil Pumps.
- 129A. Pumps P-371A (Train 1) and P-372A (Train 2) provide lube oil to their respective Makeup Pump gears.
- 130. Pumps P-371D (Train 1) and P-372D (Train 2) provide lube oil to their respective Makeup Pump gears.
- 131. The Makeup Containment Isolation Valves MU6421 (Train 1) and MU6422 (Train 2) must be open to allow Makeup Injection into the RCS. Valve MU6421 is normally closed and MU6422 is normally open.
- 132. The Makeup Pump Discharge Valves MU6419 (Train 1) and MU32 (Train 2) are required to be open to allow for Makeup Pump discharge to the RCS. Alternatively, MU32 Bypass Valve MU6420 may be opened in lieu of MU32 in the event MU32 cannot be opened.
- 133. The Makeup Cross Connect Isolation Valves MU6409 (Train 1) and MU6408 (Train 2) are required to remain open to provide Makeup flow for RCP Seal injection and Makeup Recirculation Flow to the BWST.
- 134. The Makeup Recirculation Isolation Valves MU6407 (Train 1) and MU6406 (Train 2) are required to remain open to provide a Makeup flow recirculation path to the Makeup Tank until RCS Injection is established. These valves need to close once RCS Injection is commenced. Makeup recirculation to the BWST is established by opening manual Valves MU208, HP29 and HP1556 locally.
- 135. The 3-way Makeup Pump Suction Valves MU6405 (Train 1) and MU3971 (Train 2) are required to be operable to realign Makeup System suction from the Makeup Tank to the BWST.
- 136. The Makeup Tank (T-4) provides an initial source of borated water for RCS Injection utilizing the Makeup System. In the event inventory in the Makeup Tank is depleted, the BWST provides a backup supply of borated water for RCS Injection. Note that no remote Makeup Tank monitoring capability exists.
- 137. The Seal Injection Inlet Isolation Valve MU19 is required to be throttled to provide proper amount of Makeup System flow to the RCP Seals. In the event this valve is unavailable, Manual Isolation Valve MU214 can be closed and Manual Bypass Valve MU216 can be throttled.

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138. Seal Injection Filters F59-1 and F59-2 are required functional to filter RCP Seal Injection flow impurities.
139. Seal Injection Inlet Isolation Valves MU66A through D are required to remain open to provide RCP Seal Injection Inlet flow from the Makeup or HPI Systems.
140. Seal Injection Return Isolation Valves MU59A through D are required to be open to maintain RCP Seal Injection return flow from the RCP Seals.
141. The RCP Seal Return Isolation Valve MU38 is required operable to close to isolate RCP Seal Return and is required open to provide RCP Seal Injection Controlled Bleedoff to the Makeup Tank. This valve is operated manually within 8-hours.
142. The RCS Seal Return Coolers E26-1 and E26-2 are required to ensure proper cooling of the RCS Seal Return. These are passive mechanical components and will not be affected by a fire.
143. When RCS Letdown is required to be isolated in order to maintain RCS inventory, either MU02A or B can be closed to isolate Letdown. Alternatively, both MU01A and B or MU03 can be closed to perform this function. 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. In such a case, Valves MU02A, B, MU03 and either MU01A or B must be assured open. Valve MU03 requires local manual operation if air or solenoid power is unavailable.
144. The Makeup System Letdown Coolers E25-1 and E25-2 are required to ensure proper RCS Letdown cooling.
145. The Letdown Block Orifice Isolation Valve MU04 is required to be open to promote RCS Letdown. Alternatively, manual bypass valve MU06 may be opened to provide RCS Letdown. Note that this valve may be closed for RCS Letdown isolation in lieu of Valves MU02A, B, MU03 or MU01A and B. Note that Valve MU04 is not powered by the diesels and would therefore not be remotely operable in the event of a Loss Of Offsite Power (LOOP).
146. Filter YF35 is a passive component. The ability to perform its function is not affected by a fire.
147. The Mixed Bed 1-1 Letdown Inlet Valve MU10A is required to be open to promote RCS Letdown through its associated Mixed Bed Tank T5-1. Alternatively, either Mixed Bed 1-2 Letdown Inlet Valve MU10B or Cation Bed 1-3 Letdown Flow Valve MU1903 may be opened to allow flow through their respective Mixed or Cation Beds (T5-2 and T5-3, respectively). Note that these valves are not powered from the diesels and would therefore not be remotely operable in the event of a Loss Of Offsite Power (LOOP).

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148. The Letdown to Radwaste Three-Way Valve MU11 is normally aligned to the Makeup Tank and is required operable to divert RCS Letdown to the Clean Waste Receiver Tanks (T15-1 and T15-2) as necessary. Note: MU11 is not powered from the diesels and would not be remotely operable in the event of a loss of offsite power and therefore may require manual operation.

149. Manual Valves HP26 and 27 are required to be open to re-establish seal injection when using HPIS for RCS inventory control.

Manual Valve MU182 is required to be closed to isolate seal return from the MU Tank to prevent overfilling the MU Tank.

Manual Valve MU97 is required to be opened to divert seal return to the Clean Waste Receiver Tanks to prevent overfilling the MU tank.

Manual Valves WC119 and WC120 are required to be open to align Seal Return and Letdown to the Clean Waste Receiver Tanks.

150. The Auxiliary Shutdown Panel C3630 provides power to various process monitoring instruments (See Note 162) and provides control of Aux Feedwater Throttle Valves ICS038A and B.

151. Valves WC3560 and WC1743 (or WC1747) are required open and WC1453 is required to be closed to provide an RCS Letdown path to the CWRT.

152. NUMBER NOT USED

153. Source Range Monitors NI-1 and 2, NI-5874A and NI-5875A in the Control Room or NI-5874C in the Auxiliary Building are required. I.E. Information Notice 84-09 specifically identifies Source Range Flux monitoring as one of the minimum monitoring capabilities required by the NRC to meet Appendix R (1 Train is required operable for S/D).

154. Pressurizer Level Indicators LI-RC14-1, -2, -3 and -4 are required. I.E. Information Notice 84-09 specifically requires the availability of Pressurizer Level Indication to meet Appendix R requirements (1 train is required operable for S/D).

155. Pressurizer Level Recorder LRS-RC14 provides an alternate means of monitoring Pressurizer Level in the event that Indicators LI-RC14-1 and LI-RC14-2 are not available.

156. Steam Generator Pressure Indicators PI-SP12A, PI-SP12A-1, PI-SP12B, PI-SP12B2 in the Control Room and PI-SP12A1 and PI-SP12B1 in the ASP are required. I.E. Information Notice 84-09 specifically mentions steam generator pressure as 1 of the minimum monitoring capabilities required to meet Appendix R (the Train of the SG being accredited for S/D is the Train of instrumentation that must be available).

157. Steam Generator Startup Level Indicators LI-SP09A1, LI-SP09A8A, LI-SP09B1, LI-SP09B8A, LI-SP09A8A, and LI-SP09B8A in the Control Room and LI-SP09A3 and

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LI-SP09B3 in the ASP are required. I.E. Information Notice 84-09 requires the availability of wide range SG Level Indication for S/D. However, the preferred mode of operation by TE is to use the Startup Range Monitors (0-250") which are provided from both the Control Room and Auxiliary Shutdown Panel because they are safety grade, and in the cooldown mode the AFW System will be operating such that steam generator(s) level is to be maintained within this monitoring range. Should the steam generator level rise above the specified range, AFW will be automatically or manually stopped (from the Control Room or Auxiliary Shutdown Panel) to bring down SG level.

The full (wide) range (0-600") SG Level Indicators are not used during power operation and are primarily used when filling and draining the SGs.

158. LI-SP09A8 and LI-SP09A9 (LI-SP09B8 and LI-SP09B9) provide a redundant means of monitoring SG1-2 (SG1-1) Startup Level in Fire Area FF at the SFRCS Cabinets located in the Cabinet Room (Room 502).
159. RCS Loop Pressure Indicators PI-6365A, PI-6365B, PI-RC2A3, PI-RC2A4, PI-RC2B3, PI-RC2B4 in the Control Room and PI-6365A1 and PI-6365B1 in the ASP are required. I.E. Information Notice 84-09 requires that Pressurizer Pressure Indication be available for S/D. However, Davis-Besse does not have Pressurizer Pressure Indication, specifically. Alternatively, RCS Loop Pressures can provide the necessary RCS pressure indication for S/D purposes (1 channel of the Train accredited for S/D is required available).
160. RCS Cold Leg Temperature Indicators TI-RC4A2, TI-RC4A4, TI-RC4B2, TI-RC4B4 in the Control Room and TE-RC4A2 and TE-RC4B3 in the Auxiliary Building are required. I.E. Information Notice 84-09 requires that RCS Cold Leg Temperature Indication be available for S/D.
161. RCS Hot Leg Temperature Indicators TI-RC3A5, TI-RC3A6, TI-RC3B5, and TI-RC3B6 in the Control Room, TI-RC3A4 and TI-RC3B2 in the ASP, and TE-RC3A6 and TE-RC3B5 in the Auxiliary Building are required. I.E. Information Notice 84-09 requires the ability to monitor RCS Hot Leg Temperature in the event of a fire anywhere in the plant.
162. HPIS Flow Indicators FYI-HP03A, -3B, -3C and -3D in the Control Room and FYI-HP03A1, -B1, -C1 and -D1 in the ASP are required. I.E. Information Notice 84-09 requires that diagnostic instrumentation be available for Shutdown. HPIS Flow Indication is to be assured available to aid Operations personnel in direct indication of HPIS Injection into the RCS. The power supplies for HPI flow transmitters are the essential metering cabinets X & Y (C3628 and C3629). Both are located in Fire Area R, Room 322. Pressurizer Level Indicator LT-RC-14-2 is powered by NNI and is independent of Fire Area R. This provides an indirect measurement of HPI flow during Shutdown after a fire in Room 314 or 322 which could disable all HPI flow transmitters. Manual actions also provide for reading HPI Pump Suction and Discharge Pressure to determine flow. For details of the essential metering cabinet refer to Drawing M-544-14-9. For details of the Auxiliary Shutdown Panel refer to Drawings M-544-5-15, M-544-6-10 and M-592 Rev. 6. NNI-X (C5759 B-F) and NNI-Y (C5760 D-F) power supplies are fed from an internal ABT.

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- 163. Makeup Flow Indicators FI6425, FI6435, FIMU34 and FIMU31 are required. I.E. Information Notice 84-09 requires that diagnostic instrumentation be available for Shutdown. Makeup Flow Indication is to be assured to provide direct indication of Makeup Injection into the RCS.
- 164. Direct diagnostic indication of Makeup Pump 1 runout is provided in the Control Room by Makeup Flow Indicators, FI-6425 and FI-6435 and locally at the pump via discharge pressure indicator MU25A. 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).
- 165. NUMBER NOT USED
- 166. NUMBER NOT USED
- 167. NUMBER NOT USED
- 168. NUMBER NOT USED
- 169. NUMBER NOT USED
- 170. NUMBER NOT USED
- 171. The PORV must be assured not to spuriously open and thereby inadvertently blowdown RCS inventory. The PORV is accredited for providing RCS Depressurization to the HPI Pump Discharge pressure for the case where the HPI System is accredited for RCS inventory control. Alternatively, RCS Depressurization may be performed by opening valves RC200 and RC239A.
- 172. The spurious opening of RC200 in conjunction with the opening of RC239A, RC239B or RC4632 would result in Pressurizer blowdown to the Pressurizer Quench Tank. Therefore, either RC200 or both RC239A and B and RC4632 must be assured closed for Shutdown. In those fire areas where credit is taken for RCS Depressurization via the Pressurizer Vent Header, Valves RC239A and RC200 must be assured operable.
- 173. NUMBER NOT USED
- 174. Valve RC11 provides an alternate means of isolating RCS blowdown in the event of spurious opening of the PORV. Valve RC11 is required to remain open if credit is taken for operation of the PORV for a fire in a particular fire area.
- 175. Each RCS Loop High Point Vent, 1 of the 2 Valves (RC4608A or B and RC4610A or B) is required to stay closed to prevent uncontrolled RCS blowdown via the High Point Vent. The one inch SG high point vent valve lines include a restricting orifice sized to limit the flow to within the Makeup System capacity.
- 176. NUMBER NOT USED
- 177. NUMBER NOT USED

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178. NUMBER NOT USED
179. Normally, 2 of the 3 SW Pumps (P3-1, P3-2 and P3-3) are in operation with the third as a spare. One operating pump supplies primary (essential loads) and the other pump supplies nonessential loads and a few essential loads for the redundant train. To provide Service Water to the essential SW loads for Shutdown, only 1 SW pump is required.
180. In the unlikely event that all SW pumps are lost, the Backup SW Pump (P180) can be manually aligned and run on fast speed to supply primary loads.
181. NUMBER NOT USED
182. Valves SW2927 (Train 1) and SW2928 (Train 2) are required to open to supply the CTRM EVS condensing units with cooling water.
183. Valves SW1424 (Train 1), SW1434 (Train 2) and SW1429 (Train 1/2) associated with the respective CCWS train being utilized for Safe Shutdown will need to be assured open. The valve fails open to the desired Safe Shutdown operation, therefore power supplies are not required.
184. Valves SW1356 and SW1366 (Train 1), SW1357 and SW1367 (Train 2) or SW325, SW1358 and SW1368 (Train 1/2) are required to be open when shutting down with their respective Train in order to provide cooling water to the associated CTMT air cooler.
- Only 1 Containment Air Cooler is to be in service during Shutdown to ensure adequate cooling is provided to other Safe Shutdown components cooled by the Service Water System. Spurious flow through CAC 3 will be prevented by normally closed manual Valve SW325 (SW331).
185. NUMBER NOT USED.
186. Valve SW1382 (Train 1) or SW1383 (Train 2) is required to be open when the CST Level reaches low level to provide an alternate supply of water for the Auxiliary Feedwater Pumps. In the event one of these valves can not be opened (e.g., hot short damages valve operator) an alternate source of makeup water from the Fire Water System is available.
187. One of 4 Valves (SW2929, SW2930, SW2931 or SW2932) is open and depowered at all times (controlled administratively) to ensure the availability of a SWS Discharge at all times. Thus, spurious closure of the applicable valve is not a problem. The other 3 valves will remain closed.
188. Valves SW1395 (Train 2) and SW1399 (Train 1) provide Service Water to the Turbine Plant Cooling Water System. The portions of the Service Water System supplied by these valves is not required for Safe Shutdown. Therefore, the only concern is that the valve(s) could remain open and provide substantial SWS Flow Diversion. The respective valve for the Train accredited for Shutdown in a particular fire area needs to

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be secured closed for Shutdown in order to assure adequate flow to the essential portion of SWS.

The capability of the SWS to supply Appendix R loads has been evaluated (See Ref. 2.6.Q).

189. SW45, SW46, SW54, SW55, and SWS6 are the Turbine Plant Cooling Water Heat Exchangers (TBCWHX) Isolation Valves. They serve as a backup means of isolating the TBCWHX's if SW1395 (Train 2)/SW1399 (Train 1) is unavailable.
190. NUMBER NOT USED
191. NUMBER NOT USED
192. NUMBER NOT USED
193. NUMBER NOT USED
194. NUMBER NOT USED
195. NUMBER NOT USED
196. NUMBER NOT USED
197. The Main Steam Safety Valves are mechanical components with no circuits associated with them and a fire is not expected to impact their operation. The Train 1 and 2 Main Steam Safety Valves are located in Fire Area DH, but they are separated by more than 200 feet. There is no automatic suppression system in the fire area but there is area detection. The mechanical nature of the valves, the large separation distance between trains and detection in the area is an arrangement that is satisfactory in spite of the absence of the automatic suppression.
198. On a complete Loss of Offsite Power (LOOP), SFRCS will automatically initiate once all 4 RCP's sense UV, UF (E52B/49). All SFRCS transmitters and pressure switch circuits are designed to be self-monitoring of continuity and a fire-induced open or ground in any input channel will produce a logic channel trip for that individual monitored SFRCS input.

On a loss of control power or with sufficient trips on the inputs (see SF-003 logic diagrams) both AFPT are automatically started. Automatic SG isolation can be manually blocked (reset).

The Appendix R compliance with respect to potential effects of inadvertent actuation of the Safety Features Actuation System (SFAS) and the Steam and Feedwater Rupture Control System (SFRCS) is contained in Reference 2.3.D). This evaluation analyzed the potential for inadvertent actuation of the SFAS and SFRCS trips due to a fire and the resulting impact on Safe Shutdown equipment. The evaluations provided to ensure mitigation of the potential effects of these SFAS and SFRCS trips as analyzed in Reference 2.3.D are included in Section 4.6 in the Table 1's for each Fire Area.

APPENDIX A NOTES

Manual actions are required and are listed in the notes for individual Safe Shutdown components that are required to be in a position/mode other than that after an SFAS/SFRCS actuation. Cables for sensors and actuated devices are included for conservatism so that the potential effects of a fire are identified on a component level specifically for each fire area. Fire damage to the isolated analog low level instrument loop, 4 to 20 ma SFAS input signals cannot cause an SFAS, loss of Ch 1/3 or Ch 2/4 power supplies will initiate SFAS.

The SFRCS system has a “first-out” “feed-only-good” logic design that could align feedwater to only one of two intact steam generators if a false actuation signal were generated by a fire that opened 2 complimentary SG pressure channels. Since only one steam generator is required and since manual actions are proceduralized there is no adverse impact on safe shutdown.

Operation of the disconnect switches does not isolate all Control Room circuits and local manual actions are required to close/verify closed the following valves for a fire that affects any control cables since both sets of fuses could blow with a ground that is not cleared before the disconnect switch is operated:

<u>VALVE</u>	<u>EWD</u>	<u>Required Manual Action</u>
MS603	E46B/33	Verify Closed, Close, Trip Bkr, Manually Close
MS611	E46B/33	Verify Closed, Close, Trip Bkr, Manually Close
AF3870	E46B/33	Verify Closed, Close, Trip Bkr, Manually Open
AF3872	E46B/33	Verify Closed, Close, Trip Bkr, Manually Open

199. NUMBER NOT USED

200. NUMBER NOT USED

201. Control Cabinets C6708, C6709, C6714 and C6715 provided control power to the Control Room Emergency Coolers S33-1 and S33-2.

202. MCC E12D powers the Backup Service Water Pump Room Fan (C100).

203. The Diesel Oil Transfer Pump P8-1 is used as a backup for Transfer Pump P195-1. In the event P195-1 is not available, P8-1 can be used to supply fuel oil from Storage Tank T45. Pump P8-1 would not be required until the fuel oil in the EDG Day Tank is depleted. The EDG Day Tank has a capacity for 20-hours of operation at full EDG load.

204. Valve RC147 is located in the Pressurizer Vent Header Line and is normally open. It can be used to manually isolate the Pressurizer Vent Header Line if RC200, RC239A, and RC239B are unavailable.

APPENDIX A NOTES

205. No Safe Shutdown equipment is powered from Bus B. The only concern is the potential for a fault associated with Bus B affecting backfeed of MCC D2 from Emergency Diesel Generator 1. This backfeed is utilized only when the Motor-Driven Feed Pump is used in an area accredited for Train 1. To prevent any potentially adverse effects, Breaker HBBD, located at Bus B, will be opened.

No Safe Shutdown equipment is powered from Bus A. The only concern is the potential for a fault associated with Bus A affecting backfeed of MCC C2 from Emergency Diesel Generator 2. To prevent any potentially adverse effects, Breaker HAAC located at Bus A will be opened.

206. The Reactor Coolant System (RCS) Code Safety Valves, RC13A and RC13B, provide over pressure protection for the RCS.
207. MU203 (MU206) Recirc to Seal Return Stop Valve is closed when changing the recirc path for the Makeup Pump from the Makeup Tank to the Borated Water Storage Tank.
208. CC42 is a manual isolation valve in the nonessential CCW supply line. It can be used to isolate flow in this line if CC1495 fails open due to a hot short.
209. CC43 is a manual bypass valve for CC1495. It can be used to regulate nonessential CCW if CC1495 fails closed due to loss of air or a loss of power to its solenoid valve.
210. When using the Motor-Driven Feed Pump to supply feedwater to Steam Generator 2, the Train 1 MDFP Flow Isolation Valve, FW6397, can be used to prevent the flow from diverting to Steam Generator 1 if the Train 1 MDFP Flow Control Valve is unavailable (i.e, due to a loss of Train 2 power).
211. The Makeup System is normally exposed to RCS pressure up to Restricting Orifice ROMU5. Per P&ID M-031A, Rev 43 and Plant Design Standard 12501-M-601, Revision 8, pg 7 the piping upstream of the restricting orifice (CCB) is 1500# class piping. The piping downstream of the restricting orifice is 150# class piping. The letdown relief valve MU1890 protects the low pressure letdown line and equipment from overpressure. If the letdown flow is stopped by erroneous closure of a valve in the low pressure portion of the letdown line, the letdown line pressure would immediately increase to the RCS operating pressure except for relief from the relief valve. Per SD-048, the relief valve capacity is sized to exceed the maximum letdown flow rate obtainable with the block orifice on line and flow control valve MU6 full open.
212. MU32 will fail open upon loss of air to the valve. MU32 will fail closed upon loss of NNI-X AC power supply, regardless of the NNI-X DC control signal to FYMU32.