TABLE 8.1-1

TRANSMISSION LINE INTERCONNECTIONS (1984)

From			To		
Area	Bus	Voltage (kV)	Utility	Bus	Voltage (kV)
GSU	Scott	138	CLECo	Bonnin	138
GSU	Toledo Bend Dam	138	CLECo	Leesville	138
GSU	Toledo Bend Dam	138	CLECo	Many	138
GSU	Richard	138	CLECo	Crowley	138
GSU	Richard	138	CLECo	Eunice	138
GSU	Champagne	138	CLECo	Plaisance	138
GSU	Moril	138	CLECo	New Iberia	138
GSU	Bayou Warehouse	138	CLECo	Ivanhoe	138
GSU	Newton	138	CLECo	Deridder	138
GSU	Nelson	138	CLECo	Deridder	138
GSU	Nelson	230	CLECo	DeQuincy	230
GSU	Hartburg	500	AP&L	El Dorado	500
GSU	Willow Glen	230	LP&L	Evergreen	230
GSU	McKnight	500	MP&L	Franklin	500
GSU	Gonzales	138	LP&L	Sorrento	138
GSU	Willow Glen	230	LP&L	Evergreen	230
GSU	Willow Glen	500	LP&L	Gypsy	500
GSU	Addis	115	LP&L	McCall	115
GSU	Conway	230	LP&L	Bagatelle	230
GSU	River Bend	230	CEPCo	Cajun #1	230
GSU	River Bend	500	CEPCo	Cajun #2	500
GSU	Webre	500	CEPCo	Cajun #2	500
GSU	Grimes	345	SWEPCo	Pirkey	345

TABLE 8.1-2

GENERAL DESIGN CRITERIA RELATED TO
ELECTRICAL POWER SYSTEMS

GDC[1]	Title	Applicable USAR Sections
1	Quality Standards and Records	8.2, 8.3.1, 8.3.2
2	Design Bases for Protection Against Natural Phenomenon	8.2, 8.3.1, 8.3.2
3	Fire Protection	8.2, 8.3.1, 8.3.2
4	Environmental and Missile Design Bases	8.2, 8.3.1, 8.3.2
5	Sharing of Structure, Systems, and Components	8.2, 8.3.1, 8.3.2
13	Instrumentation and Control	8.2, 8.3.1, 8.3.2
17	Electric Power Systems	8.2, 8.3.1, 8.3.2
18	Inspection and Testing of Electrical Power Systems	8.2, 8.3.1, 8.3.2
21	Protection System Reliability and Testability	8.2, 8.3.1, 8.3.2
22	Protection System Independence	8.3.2
33	Reactor Coolant Makeup	8.2, 8.3.1, 8.3.2
34	Residual Heat Removal	8.2, 8.3.1, 8.3.2
35	Emergency Core Cooling	8.2, 8.3.1, 8.3.2
38	Containment Heat Removal	8.2, 8.3.1, 8.3.2
41	Containment Atmosphere Cleanup	8.2, 8.3.1, 8.3.2
44	Cooling Water	8.2, 8.3.1, 8.3.2

[1] From 10CFR50, Appendix A

TABLE 8.1-3

BRANCH TECHNICAL POSITIONS RELATED TO
RIVER BEND STATION
ELECTRICAL POWER SYSTEMS

Branch Technical Position	Title	Applicable USAR Section(s)
BTP ICSB 2 (PSB)	Diesel-Generator Reliability Qualification Testing	8.3.1.1.4.1.1 8.3.1.2.2
BTP ICSB 8 (PSB)	Use of Diesel Generator Sets for Peaking	8.3.1.2.1.2 (9)
BTP ICSB 11(PSB)	Stability of Offsite Power System	8.2.2.2
BTP ICSB 17 (PSB)	Diesel Generator Protective Trip Circuit Bypasses	8.3.1.1.4
BTP ICSB 21	Guidance for Application of Regulatory Guide 1.47	1.8

TABLE 8.2-1

OUTAGE DATA ON 500-KV LINES
(January 1, 1967 through December 31, 1980)

Year	BW	IN	BZ	RE	CW	ST	PT	TF	CF	PL	UNK	BF	LS	CIN	TR	OR
1967																
1968		1							1							
1969	3								2	3	3					
1970	13			3						1	3					
1971	11			3	2					2						
1972	4				1					1	6	1				
1973	8	1	10	4	1											
1974	5	1		1				2		1	1	1	2			
1975	8							4			2					
1976	5	3	8				1			1					1	
1977	5	1			1										11	8
1978	5										7					3
1979	2	2	7	3				3	2		4					2
1980	2	1									10					6
TOTAL	71	10	25	14	5		1	9	5	9	36	2	2		12	19
Percent	32.2	4.5	11.4	6.4	2.3		.5	4.1	2.3	4.1	16.4	.9	.9		5.5	8.6

SOURCE: Annual Relay Performance Summary

Legend:

BF	Breaker Failure	OR	Other Reasons
BW	Bad Weather	PL	Personnel
BZ	Buzzards	PT	Potential Transformer Failure
CF	Channel Failure	RE	Relay Failure
CIN	Contaminated Insulators	ST	Setting Error
CW	Bad Wiring	TF	Tower Failure
IN	Insulator Failure	TR	Tree on Line
LS	Loose Static	UNK	Unknown

Au

TABLE 8.2-2

OUTAGE DATA ON 230-KV LINES
(January 1, 1967 through December 31, 1980)

Year	BW	IN	BZ	RE	CW	ST	PT	TF	CF	PL	UNK	BF	LS	CIN	TR	OR
1967																
1968																
1969		1		1											1	
1970																
1971	3	1							2	2	2					7
1972	2	1		1		1			2	2	4				1	9
1973	2	7									10					1
1974	14			2						3	6		1		2	2
1975	16	1		2						2	3					
1976	18	5		1					3	5	8		2		1	1
1977	14	7		1	1				1	1	6				11	13
1978	22	13		4		9	3			1	4	1		2	1	15
1979	12	10		2			5		1	1	8			7	9	11
1980	13	3		1						3	16		1	2	3	6
TOTAL	116	49		15	1	10	8		9	20	67	1	4	11	29	65
Percent	28.6	12.1		3.7	0.2	2.5	2.0		2.2	4.9	16.5	0.2	1.0	2.7	7.2	16.0

SOURCE: Annual Relay Performance Summary

Legend:

BF	Breaker Failure	OR	Other Reasons
BW	Bad Weather	PL	Personnel
BZ	Buzzards	PT	Potential Transformer Failure
CF	Channel Failure	RE	Relay Failure
CIN	Contaminated Insulators	ST	Setting Error
CW	Bad Wiring	TF	Tower Failure
IN	Insulator Failure	TR	Tree on Line
LS	Loose Static	UNK	Unknown

TABLE 8.2-3

RIVER BEND STATION LOAD FLOW STUDIES

Case	Load Condition	Generation Contingency	Transmission Contingency	Results
1	1986 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation to McKnight 500-kV line emergency outage	No overvoltage or undervoltage conditions
2	1984 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation to Big Cajun No. 2 500-kV line emergency outage	No loss of offsite power*
3	1984 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation to Enjay 230-kV line emergency outage	No loss of offsite power*
4	1984 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation to Port Hudson 230-kV line emergency outage	No loss of offsite power*
5	1984 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation to Cajun No. 1 230-kV line emergency outage	No loss of offsite power*
6	1984 Summer Peak	River Bend Station Unit 1 Off	Fancy Point Substation 500-kV to 230-kV transformer emergency outage	No loss of offsite power*

*For each of the contingency cases listed, there were no line or transformer overloads, and all bus voltages were 95 percent of rating or higher. This shows that any line or transformer outage does not result in loss of offsite power supply to River Bend Station.

TABLE 8.2-4

PERMANENT FORCED OUTAGE DATA – 500-KV LINES
(TAKEN FROM 500-KV LINE OUTAGE REPORTS)

Line	In-Service Date	Year														Total 1967-1980	Line Yrs	Circuit Length (Miles)	Outage Duration (Hr:Min)	Number of Outages/ Line Yr/ 100 Mi
		1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980					
342	1967	0	1	2	1	1	0	1	1	1	1	1	0	0	0	10	14	94.55	44:48	0.76
343	1967	0	1	4	4	0	6	5	1	1	0	3	7	1	3	36	14	49.66	35:45	5.18
345*	1967-1979	0	0	4	7	5	4	9	6	6	12	12	2			67	12	85.04	222:35	6.57
345	1979													11	4	15	2	55.92	55:43	13.41
346	1979													4	2	6	2	29.12	4:39	10.30
520	1971					1	1	3	1	0	0	0	0	0	0	6	10	26.45	10:31	2.27
547	1980														4	4	1	31.76	0:27	12.59
559	1971					9	1	1	3	2	1	5	3	3	1	29	10	229.88	44:09	1.26
620	1969			1	8	2	1	5	2	4	5	5	3	6	3	45	12	59.45	98:58	6.31
745	1979													0	2	2	2	26.45	19:12	3.78
Total System																220	79	603.24	536:24	0.46
Average Duration Per Outage																			2:26	

SOURCE: Annual Relay Performance Summary

*Line 345 originally ran from Willow Glen to Richard. In 1979, Webre Substation was installed on Line 345 between Willow Glen and Richard. Line 345 now runs from Richard to Webre, and Line 346 runs from Willow Glen to Webre.

TABLE 8.2-5

PERMANENT FORCED OUTAGE DATA – 230-KV LINES
(TAKEN FROM 230-KV LINE OUTAGE REPORTS)

Line	In-Service Date	Year													Total 1968-1980	Line Yrs	Circuit Length (Miles)	Outage Duration (Hr:Min)	Number of Outages/ Line Yr/ 100 Mi
		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980					
195	1976									1	0	3	2	2	8	5	29.78	7:13	5.37
318	1976									0	0	0	2	1	3	5	1.14	3:38	52.63
328	1980													1	1	1	2.15	0:01	46.51
333	1977										0	1	1	1	3	4	19.89	9:19	3.77
350	1976									0	0	4	1	2	7	5	2.18	22:04	64.22
358	1975								0	0	4	11	6	2	23	6	17.21	49:41	22.27
388	1971				0	0	1	2	1	0	1	0	0	2	7	10	1.43	17:01	48.95
389	1959	0	0	0	0	0	1	2	1	0	1	4	0	1	10	22	8.71	16:39	5.22
395	1972					0	0	2	3	3	1	1	4	0	14	9	13.33	25:44	11.67
428	1973						1	3	3	6	1	9	5	2	30	8	39.14	59:39	9.58
496	1969		0	0	3	9	3	3	5	5	6	7	5	5	51	12	36.38	34.13	11.68
499	1968	0	0	0	0	0	1	1	0	0	0	0	2	0	4	13	11.82	18:43	2.60
532	1972					0	3	1	1	2	1	0	0	1	9	9	16.58	7:45	6.03
554	1969		0	0	0	0	1	0	1	4	2	3	1	1	13	12	6.17	3:53	17.56
568	1980													1	1	1	49.46	0:04	2.02
572	1971				0	0	0	1	1	4	2	4	0	1	13	10	25.90	26:35	5.02
591	1973						0	0	0	0	1	2	2	1	6	8	4.93	9:09	15.21
652	1970			0	0	3	1	5	1	0	5	5	2	2	26	11	16.28	400:00	13.40
696	1977										0	3	0	1	4	4	4.83	0:14	20.70
697	1978											0	2	3	5	3	4.29	21:28	38.85

TABLE 8.2-5 (Cont'd)

Line	In-Service Date	Year													Total 1968-1980	Line Yrs	Circuit Length (Miles)	Outage Duration (Hr:Min)	Number of Outages/ Line Yr/ 100 Mi
		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980					
711	1966	0	0	0	0	0	0	0	2	1	1	0	1	0	5	15	21.03	19:17	1.59
712	1968	0	0	0	0	0	0	0	2	1	1	0	1	0	5	13	24.87	18.05	1.55
715	1969		0	0	0	3	0	0	0	0	0	1	3	4	11	12	8.45	5:05	10.85
716	1976									0	0	0	0	0	0	5	2.48	0:00	0.00
718	1971				12	2	1	5	2	7	10	9	5	2	55	10	11.19	211:27	49.15
730	1969		3	0	2	0	0	0	0	1	3	0	0	1	10	12	4.09	15:32	20.37
731	1972					5	2	3	1	5	5	1	1	2	25	9	40.75	86:02	6.82
733	1977										0	1	4	3	8	4	3.07	26:45	65.15
740	1972					0	0	0	0	0	0	0	0	0	0	9	4.09	0:00	0.00
743	1976									0	0	1	3	1	5	5	2.11	8:32	47.39
747	1975								0	1	0	0	1	2	4	6	29.83	9:32	2.23
750	1976									1	6	1	2	1	11	5	22.89	61:44	9.61
783	1976									0	0	1	1	1	3	5	.79	22:12	75.95
785	1976									0	1	2	8	0	11	5	.25	78:50	880.00
787	1976									0	0	0	0	0	0	5	.73	0:00	0.00
790	1972					0	3	1	0	0	1	1	0	0	6	9	8.69	5:40	7.67
795	1972					1	2	1	0	2	2	0	1	1	10	9	16.43	44:49	6.76
Total System															405	296	513.34	1346:35	0.2
Average Duration Per Outage																	3:19		

SOURCE: Annual Relay Performance Summary

TABLE 8.3-1
STANDBY STATION SERVICE SYSTEM LOADS

DIVISION I

Identification No.		Description	Load [1,3,4] (hp)	Starting Current [3,4,5] (Amperes)
(4.16 kV)	1ENS*SWG1A	Standby 4.16-kV AC Bus		
	1E12*C002A	Residual heat removal pump A	700	589
	1E21*C001	Low pressure core spray pump	1,250	1,020
	1SWP*P2A	Standby service water pump 2A	450	374
	1EJS*X1A	Standby 480-V ac load center		
	1EJS*X2A	Standby 480-V ac load center		
	1EJS*X3A	Standby 480-V ac transformer source to standby 480-V ac MCC 1EHS*MSS16A (standby cooling tower no. 1)		
(480 V)	1EJS*LDC1A	Standby 480-V AC Load Center		
	1BYS-CHGR1A(2)	Normal battery charger A	80 kVA	100.2
	1ENB*CHGR1A	Standby battery charger A	80 kVA	100.2
	1HVC*ACU1A	Main control room air conditioning unit	75	512
	1HVC*ACU2A	Standby switchgear room air conditioning unit	75	613
	1HVC*CH1A	Main control room air conditioning unit heating coil	65 kW	81.5
	1HVF*FLT2AH	Fuel building charcoal filter train heater coil	57 kW	71.5
•→12				
	1HVK*CHL1A	Control building chilled water compressor	250	2,011
	1HVK*CHL1C	Control building backup chilled water compressor	250	2,218
12←•				
	1HVP*FN2A	Diesel generator room A exhaust fan	100	725
	1SFC*P1A	Fuel pool cooling pump 1A	100	657
	1EHS*MCC8A	Standby 480-V ac MCC (fuel building)		
	1EHS*MCC14A	Standby 480-V ac MCC (standby switchgear room 1A, control building)		
(480V)	1EJS*LDC2A	Standby 480-V AC Load Center		
	1GTS*FN1A	Standby gas treatment exhaust fan	60	421
	1GTS*FLT1AH	Standby gas treatment heating coil	85 kW	106
	1HCS*PWRS1A	Hydrogen recombiner power panel for 1HCS*RBNR1A	75 kW	94
	1HVR*FN11A	Annulus mixing fan (Disabled)	150	1,054
	1HVR*UC1A	Containment unit cooler	150	1,141
	1HVR*UC11A	Unit cooler (auxiliary building)	75	492
•→10				
	1MHR*CRN1 [2]	Polar crane and welding receptacle (reactor building)	130 kVA	[6]
10←•				
	1EHS*MCC2A	Standby 480-V MCC (auxiliary building)		

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load [1,3,4] (hp)	Starting Current [3,4,5] (Amperes)
	1EHS*MCC2C	Standby 480-V MCC (auxiliary building)		
	1EHS*MCC2E	Standby 480-V MCC (auxiliary building)		
	1EHS*MCC2G	Standby 480-V MCC (auxiliary building)		
	1EHS*MCC2J	Standby 480-V MCC (auxiliary building)		
	1EHS*MCC2L	Standby 480-V MCC (auxiliary building)		
	1EHS*MCC15A	Standby 480-V MCC (diesel generator building)		
	1NHS-MCC102A(2)	Normal 480-V MCC (auxiliary building)		
(480 V)	1EHS*MCC16A	Standby 480-V AC MCC (Standby Cooling Tower No. 1)		
	1SWP*FN1A	Standby cooling tower No. 1 fan 1A	40(E)	353
	1SWP*FN1C	Standby cooling tower No. 1 fan 1C	40(E)	353
	1SWP*FN1E	Standby cooling tower No. 1 fan 1E	40(E)	353
	1SWP*FN1G	Standby cooling tower No. 1 fan 1G	40(E)	353
	1SWP*FN1J	Standby cooling tower No. 1 fan 1J	40(E)	353
	1SWP*FN1L	Standby cooling tower No. 1 fan 1L	40(E)	353
	1SWP*FN1N	Standby cooling tower No. 1 fan 1N	40(E)	353
	1SWP*FN1Q	Standby cooling tower No. 1 fan 1Q	40(E)	353
	1SWP*FN1S	Standby cooling tower No. 1 fan 1S	40(E)	353
	1SWP*FN1U	Standby cooling tower No. 1 fan 1U	40(E)	353
	1HVY*FN1A	Standby service water cooling tower pump house pump room A supply fan	7.5	55
	1HVY*FN1C	Standby service water cooling tower pump house pump room A standby supply ran	7.5	55
	1HVY*FN2A	Standby service water cooling tower pump house switchgear room A supply fan	4.5	31
	1HVY*FN2C	Standby service water cooling tower pump house switchgear room A standby supply fan	4.5	31
	1HVY*FN32A	Standby service water pump house return air fan	5	48
	1MHW-CRN2A	Standby cooling tower service crane	10 kVA	
	1SCV*XD16A1	Cooling tower No. 1 standby distribution transformer	15 kVA	
	1HVY*CH6A	Standby service water pump house service room coil heater	12 kW	15.1
	(*MOV, *MOD)	Motor-operated valves and dampers - various (not described)		

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
(480 V)	1EHS*MCC8A	Standby 480-V AC MCC (Fuel Building)		
	1ENB*INV01A/01A1	Vital Bus A inverter	20 kVA, 20 kVA	36/36
	1HVF*FN3A	Charcoal filter train exhaust fan	40	253
	1HVF*FN7A	Charcoal filter train decay heat removal fan	0.5	6.7
	1HVK*CHL1ALH	Control building chilled water compressor A lube oil heater	1 kW	1.3
	1HVK*CHL1APL	Control building chilled water compressor A lube oil pump	1.5(E)	22.5
	1HVK*CHL1CPL	Control building chilled water compressor C lube oil pump	1.5(E)	22.5
	1HVK*P1A	Control building chilled water recirculation pump 1A	50	320-362
	1HVK*P1C	Control building backup chilled water recirculation pump 1C	50	320-362
	1HVC*FLT3AH	Main control room charcoal filter train air heating coil	23 kW	28
	(*MOV)	Motor-operated valves - various (not described)		
	1SCV*XD8A1	Fuel building standby transformer	15 kVA	
	1HVC*FLT3AH	Charcoal filter unit heater	23 kW	
(480 V)	1EHS*MCC14A	Standby 480-V AC MCC (Control Building)		
	1ENB*INV01A/01A1	Vital bus A inverter	30 kVA/30 kVA	73/73
	1RPS*XRC10A1	Alternate power source to 1C71-P001	50 kVA	104
	1HVC*ACU3A	Chiller equipment room air-conditioning unit	5	46
	1HVC*FN1A	Main control room charcoal filter train booster fan	25	175
	1HVC*FN2A	Standby switchgear rooms return air fan	30	334
	1HVC*FN3A	Standby battery room 1A exhaust fan	1.5	18.7
	1HVC*FN3D	Standby battery room 1A standby exhaust fan	1.5	18.7
	1HVC*FN8A	Main control room charcoal filter train decay heat removal fan	0.5	6.7
	1POP*LTGR02	Main control room backup lighting	15 kVA	12.6
	1SWP*P3A	Control building chilled water condenser cooling water 3A	15	106
	1SWP*P3C	Control building chilled water condenser cooling water 3C	15	106
	1SCM*XRC14A1	Standby 120-V ac regulated power (control building)	50 kVA	104
	1SCV*XD14A1	Standby 120-V ac nonregulated power	15 kVA	19

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2A	Standby 480-V AC MCC (auxiliary building)		
	1CPM*FN1A	Hydrogen mixing fan	1.5	14
	1C41*C001A	Standby liquid control pump A	40 (E)	264
	1SCV*XD2A1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	1SCV*XD2A2	Standby 120-V ac nonregulated power (reactor building)	15 kVA	19
	1HCS*XD01A	Standby distribution transformer for hydrogen igniters	15 kVA	
	(*MOV)	Standby motor-operated valves - various (not described)		
(480-V)	1EHS*MCC2C	Standby MCC (auxiliary building)		
	1GTS*FN2A	Standby gas treatment decay heat removal fan	0.5	6.7
	1SCV*XD2C1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2E	Standby MCC (auxiliary building)		
•→10				
	1E21*C002	LPCS discharge line fill pump	3	27
	1E51*C003	RCIC discharge line fill pump	5	43
	1SCV*XD2E1	120-V ac nonregulated power (auxiliary building)	15 kVA	19
10←•				
	(*MOV)	Standby motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2G	Standby MCC (auxiliary building)		
	1HVR*UC2	Auxiliary building unit cooler	5	43
	1HVR*UC3	Auxiliary building unit cooler	7.5	56
	1HVR*UC7	Auxiliary building unit cooler	15	112

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
	1SCV*XD2G1	Standby 120-V ac non-regulated power (auxiliary building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2J	Standby MCC (auxiliary building)		
	1HVR*UC8	Auxiliary building unit cooler	15	108
	1SCV*XD2J1	Standby 120-V ac non-regulated power - auxiliary building	15 kVA	19
	1CMS*P7A	Containment/drywell hydrogen supply pump	1	15
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2L	Standby 480-V AC MCC (auxiliary building)		
	1HVR*UC6	Auxiliary building unit cooler	40	287
	1LSV*C3A	Penetration valve leakage control air compressor	50	
	1SCV*XD2L1	Standby 120-V ac non-regulated power (auxiliary building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC15A	Standby 480-V AC MCC (diesel / generator building)		
	1EGF*P1A	Diesel generator fuel oil transfer pump	3	30.8
•→12				
	EGA-C4A	Diesel generator rear air start compressor	20	175
	EGA-C5A	Diesel generator forward air start compressor	20	175
12←•				
	1HVP*FN6A	Diesel generator control room A supply fan	1 (E)	
	1SCV*XD15A1	Standby 120-V ac non-regulated power (diesel generator room A)	15 kVA	19
(480 V)	1NHS-MCC102A(2)	Normal 480-V AC MCC (auxiliary building)		
•→10•→8				
	1DRS-UC1A	Drywell unit cooler	60	457
	1DRS-UC1C	Drywell unit cooler	60	457
•←8 10←•				

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load (1,3,4) (hp)	Starting Current (3,4,5) (Amperes)
DIVISION 1				
•→10 •→8 •→7	1DRS-UC1E	Drywell unit cooler	60	457
	1SLP-1	CCTV surveillance light	26.4 kW	
•←7 •←8 10←•				
DIVISION II				
(4.16 kV)	1ENS*SWG1B	Standby 4.16 kV AC Bus		
	1E12*C002B	Residual heat removal pump B	700	589
	1E12*C002C	Residual heat removal pump C	700	589
	1SWP*P2B	Standby service water pump 2B	450	374
	1SWP*P2D	Standby service water pump 2D	450	374
	1EJS*X1B	Standby 480-V ac load center		
	1EJS*X2B	Standby 480-V ac load center		
	1EJS*X3B	Standby 480-V ac transformer source to standby 480-V ac MCC 1EHS*MCC16B (standby cooling tower No. 1)		
(480 V)	1EJS*LDC1B	Standard 480-V AC Load Center		
	1BYS-CHGR1B(2)	Normal battery charger B	80 kVA	100.2
	1ENB*CHGR1B	Standby battery charger B	80 kVA	100.2
	1HVC*ACU1B	Main control room air-conditioning unit	75	512
	1HVC*ACU2B	Standby switchgear room air-conditioning unit	75	613
	1HVC*CH1B	Main control room air-conditioning unit heating coil	65 kW	81.5
	1HVF*FLT2BH	Fuel building charcoal filter train heating coil	57 kW	71.5
•→12	1HVK*CHL1B	Control building chilled water compressor	250	2,011
	1HVK*CHL1D	Control building backup chilled water compressor	250	2,011
12←•	1HVP*FN2B	Diesel generator room B exhaust fan	100	725
	1SFC*P1B	Fuel pool cooling pump 1B	100	657
	1EHS*MCC8B	Standby 480-V ac MCC (fuel building)		
	1EHS*MCC14B	Standby 480-V ac MCC (standby switchgear room 1B, control building)		
	1NHS-MCC101(2)	Normal 480-V ac MCC (turbine building)		
(480 V)	1EJS*LDC2B	Standby 480-V AC Load Center		
	1GTS*FN1B	Standby gas treatment exhaust fan	60	421
	1GTS*FLT1BM	Standby gas treatment heating coil	85 kW	106
	1HCS*PWRS1B	Hydrogen recombiner power panel for 1HCS*PBNR1B	75 kW	94

TABLE 8.3-1 (Cont)

DIVISION II	Identification No.	Description	Load [1,3,4] (hp)	Starting Current [3,4,5] (Amperes)
	1HVR*FN11B	Annulus mixing fan (Disabled)	150	1,054
	1HVR*UC1B	Containment unit cooler	150	1,441
	1HVR*UC11B	Unit cooler (auxiliary building)	75	492
	1EHS*MCC2B	Standby 480-V ac MCC (auxiliary building)		
	1EHS*MCC2D	Standby 480-V ac MCC (auxiliary building)		
	1EHS*MCC2F	Standby 480-V ac MCC (auxiliary building)		
	1EHS*MCC2H	Standby 480-V ac MCC (auxiliary building)		
	1EHS*MCC2K	Standby 480-V ac MCC (auxiliary building)		
	1EHS*MCC15B	Standby 480-V ac MCC (diesel generator building)		
	1NHS-MCC102B(2)	Normal 480-V ac MCC (auxiliary building)		
	1IHS-CHGR1D(2)	Information handling system battery charger	80 kVA	101
	1HVR-UC1C(2)	Containment unit cooler	150	1,441
(480 V)	1EHS*MCC16B	Standby 480-V AC MCC (Standby Cooling Tower No. 1)		
	1SWP*FN1B	Standby cooling tower No. 1 fan 1B	40(E)	353
	1SWP*FN1D	Standby cooling tower No. 1 fan 1D	40(E)	353
	1SWP*FN1F	Standby cooling tower No. 1 fan 1F	40(E)	353
	1SWP*FN1H	Standby cooling tower No. 1 fan 1H	40(E)	353
	1SWP*FN1K	Standby cooling tower No. 1 fan 1K	40(E)	353
	1SWP*FN1M	Standby cooling tower No. 1 fan 1M	40(E)	353
	1SWP*FN1P	Standby cooling tower No. 1 fan 1P	40(E)	353
	1SWP*FN1R	Standby cooling tower No. 1 fan 1R	40(E)	353
	1SWP*FN1T	Standby cooling tower No. 1 fan 1T	40(E)	353
	1SWP*FN1V	Standby cooling tower No. 1 fan 1V	40(E)	353
	1HVY*FN1B	Standby service water cooling tower pumphouse pump A supply fan	7.5	55
	1HVY*FN1D	Standby service water cooling tower pumphouse pump room A standby supply fan	7.5	55
	1HVY*FN2B	Standby service water cooling tower pumphouse switchgear room A supply fan	4.5	31
	1HVY*FN2D	Standby service water cooling tower pumphouse switchgear room A standby supply fan	4.5	31
	1HVY*FN32B	Standby service water pumphouse return air fan	5	48
	1MHW-CRN2B	Standby cooling tower service crane	10 kVA	
	1SCV*XD16B1	Cooling tower No. 1 standby distribution transformer	15 kVA	
	1HVY*CH6B	Standby service water pumphouse switchgear room coil heater	12 kW	15.1

TABLE 8.3-1 (Cont)

DIVISION II Identification No.		Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
	(*MOV, *MOD)	Motor-operated valves and dampers-various (not described)		
(480 V)	1EHS*MCC8B	Standby 480-V AC MCC (fuel building)		
•→15 •→7				
	1ENB*INV01B/01B1	Vital bus B inverter	20 kVA/20kVA	37/36
15←•				
	1HVF*FN3B	Charcoal filter train exhaust fan	40	253
	1HVF*FN7B	Charcoal filter train decay heat removal fan	0.5	6.7
	1HVK*CHL1BPL	Control building chilled water compressor B lube oil pump	1.5(E)	22.5
	1HVK*CHL1DPL	Control building chilled water compressor D lube oil pump	1.5(E)	22.5
	1HVK*P1B	Control building chilled water recirculation pump 1B	50	320-362
	1HVK*P1D	Control building chilled water recirculation pump chill water pp 1D	50	320-362
	1HVC*FLT3BH	Charcoal filter train air heater	23 kW	28.5
	1SCV*XD8B1	Fuel building standby transformer	15 kVA	
	(*MOV)	Standby motor-operated valves – various (not described)		
7←•				
(480 V)	1EHS*MCC14B	Standby 480-V AC MCC (Control Building)		
•→15				
	1ENB*INV01B/01B1	Vital bus B inverter	20 kVA/30kVA	60/73
15←•				
	1HVC*ACU3B	Chiller equipment room air-conditioning unit	5	46
	1HVC*FN1B	Main control room charcoal filter train booster fan	25	175
	1HVC*FN2B	Standby switchgear rooms return air fan	30	234
	1HVC*FN3B	Standby battery room 1B exhaust fan	1.5	18.7
	1HVC*FN3E	Standby battery room 1B standby exhaust fan	1.5	18.7
	1HVC*FN8B	Main control room charcoal filter train decay heat removal fan	0.5	6.7
	1POP*LTGR03	Main control room backup lighting	15 kVA	
	1SWP*P3B	Control building chilled water condenser cooling water pump 3B	15	106
	1SWP*P3D	Control building chilled water condenser cooling water pump 3D	15	106
	1SCM*XRC14B1	Standby 120-V ac regulated power (control building)	50 kVA	104
	1RPS*XRC10B1	Alternate power source to 1C71-P002	50 kVA	104

TABLE 8.3-1 (Cont)

	Identification No.	Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
	1SCV*XD14B1	Standby 120-V ac nonregulated power (control building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2B	Standby 480-V ac MCC (auxiliary building)		
	1CPM*FN1B	Hydrogen mixing fan	1.5	14
	1C41*C001B	Standby liquid control pump B	40	264
	1LSV*C3B	Penetration valve leakage control air compressor	50	108
	1SCV*XD2B1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	1SCV*XD2B2	Standby 120-V ac nonregulated power (reactor building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2D	Standby MCC (auxiliary building)		
	1GTS*FN2B	Standby gas treatment decay heat removal fan	0.5	6.7
	1SCV*XD2D1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2F	Standby MCC (auxiliary building)		
•→10				
10←•				
	1E12*C003	RHR discharge line fill pump motor	3	27
	1SCV*XD2F1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2H	Standby MCC (auxiliary building)		
	1HVR*UC4	Auxiliary building unit cooler	7.5	56
	1HVR*UC9	Auxiliary building unit cooler	30	202
	1HVR*UC10	Auxiliary building unit cooler	5	43

TABLE 8.3-1 (Cont)

DIVISION I	Identification No.	Description	Load [1,3,4] (hp)	Starting [3,4,5] Current (Amperes)
	1SCV*XD2H1	Auxiliary building standby distribution transformer	15 kVA	
	(*MOV)	Motor-operated valves - various (not described)		
(480 V)	1EHS*MCC2K	Standby MCC (auxiliary building)		
•→7				
	1SCV*XD2K1	Standby 120-V ac nonregulated power (auxiliary building)	15 kVA	19
	1CMS*P78	Containment/drywell hydrogen sample pump	1	
	(*MOV)	Motor-operated valves - various (not described)		
•←7				
(480 V)	1EHS*MCC15B	Standby 480-V AC MCC (diesel generator building)		
	1EGF*P1B	Diesel generator fuel oil transfer pump	3	30.8
•→12				
	EGA-C4B	Diesel generator rear air start compressor	20	175
	EGA-C5B	Diesel generator forward air start compressor	20	175
•←12				
	1HVP*FN6B	Diesel generator control room B supply fan	1	15
	1SCV*XD15B1	Standby 120-V ac nonregulated power (diesel generator room B)	15 kVA	19
(480 V)	1NHS-MCC101(2)	Normal 480-V AC MCC (turbine building)		
	1LPM-1	Bearing lift pump (turbine)	5(E)	46
	1LPM-2	Bearing lift pump (turbine)	5(E)	46
	1LPM-3	Bearing lift pump (turbine)	5(E)	46
	1LPM-4	Bearing lift pump (turbine)	5(E)	46
	1LPM-5	Bearing lift pump (turbine)	5(E)	46
	1LPM-6	Bearing lift pump (turbine)	5(E)	46
	1MSOPM	Hydrogen main seal oil pump	20(E)	145
	1MSP	Motor oil suction pump	40(E)	290
	1TGM	Turning gear	60(E)	590
	1TGOP	Turning gear oil pump	40(E)	290
	1VXM	Vapor extraction pump	5(E)	46
	1PBM	Turning gear piggyback motor	0.75	6.1
	1SCA-XD101	Turbine building distribution transformer	15 kVA	
	GMH-SOVPM	Hydrogen seal oil vacuum pump motor	2	16.3

TABLE 8.3-1 (Cont)

Identification No.		Description	Load (1,3,4) (hp)	Starting Current (3,4,5) (Amperes)
(480 V)	1NHS-MCC102B(2)	Normal 480-V AC MCC (auxiliary building)		
•→10 •→8 •→7				
	1C71-S001B	Reactor protection system motor generator set B	25(E)	180
	1DRS-UC1B	Drywell unit cooler	60	457
	1DRS-UC1D	Drywell unit cooler	60	457
	1DRS-UC1F	Drywell unit cooler	60	457
	1CPP-FN1	Hydrogen purge fan motor	1	8.4
	1SLP-2	CCTV surveillance light	26.4 kW	
10←• 8←• 7←•				

(1) Unless noted otherwise.
(2) This load trips on LOCA signal.
•→12
(3) Loads and starting currents are based on vendor data unless indicated by (E).
12←•
(4) (E) indicates estimated load with starting current @ 6 x calculated full load amperage (FIA).
(5) Starting currents for resistive loads are based on full load current @ 460 V.
(6) Varies with mode of operation.
•→10
(7) Note Deleted.
10←•

TABLE 8.3-2a

AUTOMATIC AND MANUAL LOADING OF ESF BUSES
Division I - 1EGS*EG1A

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
•→4									
Charcoal Filter Heater	1HVC*FLT3AH	1	1	23 KW	NA	25	10 sec	(3)	
Filter Train Booster Fan	1HVC*FN1A	1	1	25 HP	20.0	17.3	10 sec	(3)	
Battery Room Exhaust Fan	1HVC*FN3A/D	2	1	1.5 HP	1.0	1.1	10 sec	(3)	
•→14 •→12									
Auxiliary Building Unit Coolers	1HVR*UC2	1	1	7.5 HP	3.13	2.74	10 sec	(3)	
	1HVR*UC3	1	1	7.5 HP	5.1	4.6	10 sec	(3)	
	1HVR*UC6	1	1	40 HP	40	31.68	10 sec	(3)	
	1HVR*UC7	1	1	15 HP	11.7	9.9	10 sec	(3)	
Filter Train Exhaust Blower	1HVF*FN3A	1	1	40 HP	30	25.4	10 sec	(3)	
Filter Train Heater	1HVF*FLT2AH	1	1	57 KW	NA	62.1	10 sec	(3)	
Standby Serv Wtr Pump House Supply Fan	1HVY*FN1A	1	1	7.5 HP	6.66	5.77	10 sec	(3)	
120 V AC Standby Power	Misc	Misc	-	----	----	67.5	10 sec	(3)	
•→11									
Motor-Operated Valves	Misc	Misc	-	----	----	92.68	10 sec	(3)	
Standby Vital Bus-UPS System	1ENB*INV01A/01A1	2	1	20 KVA	NA	0.0	10 sec	(18, 21)	
125 V DC Battery Charger	1ENB*CHGR1A	1	1	47.5 KW	NA	47.5	10 sec	(3, 19)	
11←•									
Standby Cooling Tower Swgr Fan	1HVY*FN2A/2C	2	2	3 HP	4.06	3.64	10 sec	(3)	
Standby D.G. Fuel Trans Pump	1EGF*P1A	1	1	3 HP	3.0	2.93	10 sec	(3)	
Misc. Transformers Losses	1EJS*X1A, 2A, 3A	-	-	----	----	21.6	10 sec	(3)	
Lighting Transformer-Control Room	1LAC-XLC9	1	1	15 KVA	NA	11.3	10 sec	(3)	
RCIC Disch Line Fill Pump	1E51*C003	1	1	5 HP	2.9	2.8	10 sec	(3)	
Exciter Panel Cooling Fan	1HVP*FN6A	1	1	2 HP	1.7	1.6	10 sec	(3)	
LPCS Discharge Line Fill Pump	1E21*C002	1	1	3 HP	2.3	2.2	10 sec	(3)	
Stby Clg Twr Remote Intake Fan	1HVY*FN32A	1	1	5 HP	3.34	3.1	10 sec	(3)	
Stby Clg Twr Remote Intake Heater	1HVY*CH6A	1	1	12 KW	NA	12.0	10 sec	(3)	
Contmt Monitoring Sample Pump	1CMS*P7A	1	1	1 HP	----	0.9	10 sec	(3)	
Auxiliary Building Unit Cooler	1HVR*UC8	1	1	15 HP	10.5	9	10 sec	(3)	
Stdby D.G. Rear Air Compressor	EGA-C4A	1	1	20 HP	20.0	16.2	10 sec	(3)	
Stdby D.G. Forward Compressor Fan Margin	EGA-C5A	1	1	20 HP	20.0	16.2 4.8	10 sec	(3)	
12←•									
TOTAL 10 SECOND LOAD BLOCK									491.3
14←•									
Low Pressure Core Spray Pump	1E21*C001	1	1	1250 HP	1180.6	943.1	12 sec	(3, 11)	
TOTAL 10-15 SECOND LOAD BLOCK									943.1

4←• 7←•

TABLE 8.3-2a (Cont)

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
•→4									
Residual Heat Removal Pump A	E12*C002A	1	1	700 HP	583.7	472.4	17 sec	(3)	
TOTAL 15-20 SECOND LOAD BLOCK									472.4
•→12 •→7									
Stdby D.G. Room Vent Fan	1HVP*FN2A	1	1	100 HP	41.9	34.3	34 sec	(3, 12)	
Annulus Mixing System Fan (Disabled)	1HVR*FN11A	1	1	150 HP	127	101.8	34 sec	(3)	
Stby Gas Treatment Fan	1GTS*FN1A	1	1	60 HP	54.3	44.91	40 sec	(3)	
Stby Gas Treatment Heater	1GTS*FLT1AH	1	1	85 KW	NA	92.6	40 sec	(3)	
Aux Bldg Unit Cooler	1HVR*UC11A	1	1	75 HP	67.5	54.3	30 sec	(3)	
Control Bldg Chilled Water Pump	1HVK*P1A/P1C	2	1	50 HP	18.5	15.6	40 sec	(3,14,22)	
Equip Rm Air Cond Unit Motor	1HVC*ACU3A	1	1	5 HP	1.93	2.1	40 sec	(3,14,15,22)	
Stby Swgr Room Exhaust Fan Fan Margin	1HVC*FN2A	1	1	30 HP	22.4	18.3 5.5	40 sec	(3,14,15,22)	
TOTAL 30-40 SECOND LOAD BLOCK									267.6
7←•									
Cont Rm Air Conditioning Unit	1HVC*ACU1A	1	1	75 HP	60.0	49.0	60 sec	(3, 22)	
•→11									
Stby Swgr Rm Air Handling Unit	1HVC*ACU2A	1	1	75 HP	63.8	53.2	60 sec	(3, 22)	
Stby Service Water Pump	1SWP*P2A	1	1	450 HP	412.1	328.8	70 sec	(3)	
Control Room Heater Fan Margin	1HVC*CH1A	1	1	65 KW	NA	0 5.1	60 sec 60 sec	(17, 22) (20)	
TOTAL 60-90 SECOND LOAD BLOCK									436.1
11←• •→14 •→7									
Control Building Chiller	1HVK*CHL1A/1C	2	1	250 HP	250	202.7	211 sec	(3,12,13,22)	
Control Bldg Chiller-L.O. Pump	1HVK*CHL1APL/ 1HVK*CHL1CPL	2	1	1.5 HP	NA	1.4	211 sec	(3, 13, 22)	
Control Bldg Chilled Recirc Pmp	1SWP*P3A/P3C	2	1	15 HP	6.3	5.9	180 sec	(3,15,16,22)	
TOTAL 1.5-10 MINUTE LOAD BLOCK									210
7←•									
Containment Unit Cooler	1HVR*UC1A	1	1	150 HP	119.6	96.6	10 min, 10 S	(3)	
Leakage Control Air Compressor	1LSV*C3A	1	1	50 HP	NA	43.0	10 min	(3)	
•→8A •→8									
Drywell Hydrogen Mixing Fan (+) Fan Margin	1CPM*FN1A	1	1	1.5 HP	0.81	0.9 4.8	10 min, 10 S	(5) (20)	
TOTAL 10-12 MINUTE LOAD BLOCK									145.3
•→11									
125 Vdc Battery Charger	1ENB*CHGR1A	1	1	47.5 KW max 32.4 KW cont	NA	-47.5 32.4	10 min		
Motor Operated Valves	Misc	Misc	-	----	----	-92.68	10 min	(3)	
Load Reduction at ~10 minutes									-107.8
11←• •→7									
Maximum Coincidence Load Which Could Automatically Start									2858.0

4←• 7←• 8←• 8A←• 12←• 14←•

TABLE 8.3-2a (Cont)

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
•→4 •→7									
Auxiliary Building MCC Misc	1NHS-MCC102A	1	1	26.4 KW	NA	26.4	> 2.0 hr	(3)	
7←• •→14 •→12 •→11 •→10									
Drywell Unit Cooler	1DRS-UC1A	1	1	30 HP/60 HP	18.3/58.0	15.0/47.3	> 2.0 hr	(5)	
	1DRS-UC1C	1	1	30 HP/60 HP	18.3/58.0	15.0/47.3	> 2.0 hr	(5)	
	1DRS-UC1E	1	1	30 HP/60 HP	18.3/58.0	15.0/47.3	> 2.0 hr	(5)	
10←• 11←• 12←• ←•14									
Control Room Charcoal Filter	1HVC*FN8A	1	1	0.5 HP	0.15	0.3			
F. B. Filter Decay Heat Removal Fan	1HVF*FN7A	1	1	0.5 HP	0.15	0.3			
SGTS Filter Decay Heat Removal Fan	1GTS*FN2A	1	1	0.5 HP	0.15	0.3			
Normal Battery Charger	1BYS-CHGR1A	1	1	NA	NA	58.5	> 2.0 hr	(5)	
Standby Cooling Tower Fans	1SWP*FN1A	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1C	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1E	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1G	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1J	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1L	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1N	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1Q	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1S	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1U	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
Fuel Pool Cooling Pumps	1SFC*P1A	1	1	100 HP	75.0	60.6	> 2.0 hr	(5)	
•→8A									
8A←•									
Standby Liquid Control Pump	1C41*C001A	1	1	40 HP	35.0	28.4	> 2.0 hr	(5)	
Hydrogen Recombiner	1HCS*RBNR1A	1	1	75 KW	NA	81.7	> 2.0 hr	(5)	
Hydrogen Ignitor	1HCS*XD01A	1	1	15 KVA	NA	15.0	> 2.0 hr	(5)	
Lighting Transformer Control Room	1LAC-XLC9	1	1	15 KVA	NA	11.3	> 2.0 hr	(3)	
Control Room Heater	HVC-CH1A	1	1	65 kW	NA	70.8	> 2.0 hr	(3)	
Additional Misc Transformer Losses	EJS-X1A					2.6	> 2.0 hr		
	EJS-X2A								
	EJS-X3A								

TABLE 8.3-2b
AUTOMATIC AND MANUAL LOADING OF ESF BUSES
Division II - EGS*EG1B

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
•→14 •→12 •→7 •→4									
Control Bldg Chilled Water Pump	1HVK*P1B/D	2	1	50 HP	18.5	15.6	10 sec	(3)	
Equip Rm Air Cond Unit Motor	1HVC*ACU3B	1	1	5 HP	1.93	2.1	10 sec	(3)	
Stby Swgr Room Exhaust Fan	1HVC*FN2B	1	1	30 HP	22.4	18.3	10 sec	(3)	
Charcoal Filter Heater	1HVC*FLT3BH	1	1	23 KW	NA	25	10 sec	(3)	
Filter Train Booster Fan	1HVC*FN1B	1	1	25 HP	20.0	17.3	10 sec	(3)	
Battery Room Exhaust Fan	1HVC*FN3B/E	2	1	1.5 HP	1.0	1.1	10 sec	(3)	
Auxiliary Bldg Unit Coolers	1HVR*UC4	1	1	7.5 HP	4.25	3.74	10 sec	(3)	
	1HVR*UC9	1	1	30 HP	26.6	21.09	10 sec	(3)	
	1HVR*UC10	1	1	5 HP	1.81	1.7	10 sec	(3)	
Filter Train Exhaust Blower	1HVF*FN3B	1	1	40 HP	30	25.4	10 sec	(3)	
Filter Train Heater	1HVF*FLT2BH	1	1	57 KW	NA	62.1	10 sec	(3)	
Stby Serv Wtr Pp Hse Supply Fan	1HVY*FN1B/1D	2	2	7.5 HP	13.32	11.53	10 sec	(3)	
•→11									
Motor-Operated Valves	MISC	MISC	-	----	----	97.09	10 sec	(3,4)	
11←•									
120 V AC Standby Power	MISC	MISC	-	----	----	60.01	10 sec	(3)	
•→15 •→11									
Standby Vital Bus-UPS System	1ENB*INV01B/01B1	2	1	20 KVA	NA	0.0	10 sec	(18,21)	
15←•									
125 V DC Battery Charger	1ENB*CHGR1B	1	1	47.5 KW	NA	47.5	10 sec	(3)	
Lighting Transformer-Control Room	1LAC-XLC9	1	1	15 KVA	NA	11.3	10 sec	(3)	
Standby Cooling Tower Swgr Fan	1HVY*FN2B/2D	2	2	3 HP	4.06	3.64	10 sec	(3)	
Standby D.G. Fuel Trans Pump	1EGF*P1B	1	1	3 HP	3.0	2.93	10 sec	(3)	
Misc. Transformers Losses	1EJS*X1B,2B,3B	-	-	----	----	20.4	10 sec	(3)	
Exciter Panel Cooling Fan	1HVP*FN6B	1	1	3 HP	2.7	2.7	10 sec	(3)	
RHR Discharge Line Fill Pump	1E12*C003	1	1	3 HP	2.06	2.1	10 sec	(3)	
Standby Clg Twr Remote Intake Fan	1HVY*FN32B	1	1	5 HP	3.34	3.1	10 sec	(3)	
Standby Clg Twr Remote Intake Heater	1HVY*CH6B	1	1	12 KW	NA	13.1	10 sec	(3)	
Contmt Monitoring Sample Pump	1CMS*P7B	1	1	1 HP	----	0.9	10 sec	(3)	
Aux Bldg Floor Drain Pump	1DFR*P5A	1	1	3.0 HP	3.0	2.8	10 sec	(3)	
Aux Bldg Floor Drain Pump	1DFR*P5B	1	1	3.0 HP	3.0	2.8	10 sec	(3)	
Aux Bldg Floor Drain Pump	1DFR*P5D	1	1	3.0 HP	3.0	2.8	10 sec	(3)	
Aux Bldg Floor Drain Pump	1DFR*P5E	1	1	3.0 HP	3.0	2.8	10 sec	(3)	
Stby D.G. Rear Air Compressor	EGA-C4B	1	1	20 HP	20	16.2	10 sec	(3)	
Stby D.G. Forward Air Compressor Fan Margin	EGA-C5B	1	1	20 HP	20	16.2 4.6	10 sec	(3) (20)	
TOTAL 10 SECOND LOAD BLOCK									517.99
7←• 11←• 12←• 14←•									
Residual Heat Removal Pump C	1E12*C002C	1	1	700 HP	590.6	477.9	12 sec	(3)	
TOTAL 10-15 SECOND LOAD BLOCK									477.9

4←•

TABLE 8.3-2b (Cont)

•→4

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
•→14 •→12 •→7 •→4									
Residual Heat Removal Pump B	1E12*COO2B	1	1	700 HP	589.2	476.8	17 sec	(3)	
TOTAL 15-20 SECOND LOAD BLOCK									476.8
•→12									
Stby D.G. Room Vent Fan	1HVP*FN2B	1	1	100 HP	41.9	34.3	34 sec	(3,12)	
Annulus Mixing System Fan (Disabled)	1HVR*FN11B	1	1	150 HP	127	101.8	34 sec	(3)	
Stby Gas Treatment Fan	1GTS*FN1B	1	1	60 HP	54.3	44.91	40 sec	(3)	
Stby Gas Treatment Heater	1GTS*FLT1BH	1	1	85 KW	NA	92.6	40 sec	(3)	
Aux Bldg Unit Cooler	1HVR*UC11B	1	1	75 HP	67.5	54.3	30 sec	(3)	
Standby Service Water Pump Fan Margin	1SWP*P2B	1	1	450 HP	338	269.7 4.4	40 sec	(3) (20)	
TOTAL 30-40 SECOND LOAD BLOCK									500.2
Cont Rm Air Conditioning Unit	1HVC*ACU1B	1	1	75 HP	60.0	49.0	60 sec	(3)	
•→11									
Stby Swgr Rm Air Handling Unit	1HVC*ACU2B	1	1	75 HP	63.8	53.2	60 sec	(3)	
11←•									
Stby Service Water Pump	1SWP*P2D	1	1	450 HP	350.1	279.3	70 sec	(3)	
Control Room Heater Fan Margin	1HVC*CH1B	1	1	65 KW	NA	70.8 5.1	60 sec	(17) (20)	
•→11									
TOTAL 60-90 SEC LOAD BLOCK									457.4
11←• •→14 •→7									
Control Building Chiller	1HVK*CHL1B/D	2	1	250 HP	NA	202.7	211 sec	(3,12,13)	
Control Bldg Chiller-L.O. Pump	1HVK*CHL1BPL/ 1HVK*CHL1DPL	2	1	1.5 HP	1.5	1.4	211 sec	(3,13)	
Control Bldg Chilled Recirc Pump	1SWP*P3B or D	1	1	15 HP	6.3	5.9	180 sec	(3,15,16)	
TOTAL 1.5-10 MINUTE LOAD BLOCK									210
Containment Unit Cooler	1HVR*UC1B	1	1	150 HP	119.6	96.6	10 min, 10 S	(3)	
Leakage Control Air Compressor	1LSV*C3B	1	1	50 HP	50	43.0	10 min	(3)	
14←• •→8A									
Drywell Hydrogen Mixing Fan Fan Margin	1CPM*FN1B	1	1	1.5 HP	0.81	0.9 4.8	> 2.0 hr	(5) (20)	
TOTAL 10-12 MINUTE LOAD BLOCK									145.3
•→11									
125 Vdc Battery Charger	1ENB*CHGR1B	1	1	47.5 KW max 32.4 KW cont	NA	-47.5 32.4	10 min 10 min	(3,19)	
Motor-Operated Valves	MISC	MISC	-	----	----	-97.09	10 min	(3,4)	
Load Reduction at ~10 min									-112.2
11←• •→14									
Maximum Coincidence Load Which Could Automatically Start									2673.39

4←• 7←• 8A←• 12←• 14←•

TABLE 8.3-2b (Cont)

•→4 •→7

Load Description	Load ID	No. on Bus	No. Req.	Loss-of-Coolant Accident					
				Nameplate HP/KW[2]	Running BHP[2]	Running KW[2]	Time Start[1]	Time Stop	Block Load Total KW
Auxiliary Building MCC Misc	1NHS-MCC102B	MISC	MISC	26.4 KW	NA	26.4	> 2.0 hr	(3)	
7←• •→12 •→11 •→10									
Drywell Unit Cooler	1DRS-UC1B	1	1	30 HP/60 HP	18.3/58	15/47.3	> 2.0 hr	(5)	
	1DRS-UC1D	1	1	30 HP/60 HP	18.3/58	15/47.3	> 2.0 hr	(5)	
	1DRS-UC1F	1	1	30 HP/60 HP	18.3/58	15/47.3	> 2.0 hr	(5)	
10←• 11←• 12←•									
Containment Unit Cooler	1HVR-UC1C	1	1	150 HP	119.6	96.6	> 2.0 hr		
Control Room Charcoal Filter	1HVC*FN8B	1	1	0.5 HP	0.15	0.3	-		
F.B. Filter Dcy Heat Removal Fan	1HVF*FN7B	1	1	0.5 HP	0.15	0.3	-		
SGTS Filter Dcy Heat Removal Fan	1GTS*FN2B	1	1	0.5 HP	0.15	0.3	-		
Normal Battery Charger	1BYS-CHGR1B	1	1	NA	NA	58.5	> 2.0 hr		
Turbine Bldg MCC	1NHS-MCC101	MISC	MISC	NA	NA	199.4	> 2.0 hr		
Info Sys Handling Battery Chgr	1IHS-CHGR1D	1	1	80 KVA	NA	58.5	> 2.0 hr		
Standby Cooling Tower Fans	1SWP*FN1B	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1D	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1F	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1H	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1K	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1M	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1P	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1R	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1T	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
	1SWP*FN1V	1	1	40 HP	34.7	29.7	> 2.0 hr	(5)	
Fuel Pool Cooling Pumps	1SFC*P1B	1	1	100 HP	75.0	60.6	> 2.0 hr	(5)	
•→8A 8A←•									
Standby Liquid Control Pump	1C41*C001B	1	1	40 HP	35.0	28.4	> 2.0 hr	(5,7)	
Hydrogen Recombiner	1HCS*RBNR1B	1	1	75 HW	NA	81.7	> 2.0 hr	(5)	
Hydrogen Ignitor	1HCS*XD01B	1	1	15 KVA	NA	15.0	> 2.0 hr	(5)	
•→7									
Hydrogen Purge Fan Motor	1CPP-FN1	1	1	1 HP	1.0	0.9	> 2.0 hr		
7←• 4←•									
Additional Misc. Transformer Losses	EJS-X1B EJS-X2B EJS-X3B					2.7	> 2.0 hr		

•→4
4←•

NOTES FOR TABLES 8.3-2a and 8.3-2b

(1) The time indicated in this column is calculated from the instant LOCA and/or LOOP signals given to emergency diesel generators. Maximum time for standby diesel generators to start and attain rated speed and frequency, including diesel generator air circuit breaker (ACB) closure, is 10 sec.

(2) Nameplate horsepower and brake horsepower are supplied by vendors for their furnished equipment. The required kilowatts for each load are calculated by using brake horsepower and the efficiency data supplied by vendors of the respective equipment.

(3) This load starts and/or stops automatically with satisfactory complete actuation or energization of its associated pump, valves, pressure or temperature switches' interlocks, or energization of the required buses from the standby power sources.

(4) Motor operators of the MOVs stop automatically when the valve action is completed. All MOV loads complete their intended operation and are deenergized within 10 min of diesel generator ACB closing. MOV actuation after 10 min is assumed to occur on an individual and random basis, and the resultant loads are assumed to be inconsequential.

•→8A •→8 •→9
(5) Started and/or stopped manually by operator. The SCT fans will be started one hour into a LOP-LOCA.
8←• 8A←• 9←•

•→3 3←•
(6) 1LAC-XLC9 has two sources of power from which it may select. This is not tripped on LOCA and is normally connected to diesel generator 1EGS*EG1B. On diesel generator 1EGS*EG1B failure, 1LAC-XLC9 can be manually connected to diesel generator 1EGS*EG1A after the LPCS pump is turned off.

(7) 1C41*C001A and B may be energized at the discretion of the plant operator.

(8) The attached load profile is a representative loading considering a single failure during LOCA and loss of offsite power. At 2 hr, operators' manual actions are shown to trip and start loads which must not exceed the DG allowable loading limits.

(9) 1HVY*FN1A is supplied from diesel generator 1EGS*EG1A. 1HVY*FN1C and 1SWP*P2C are supplied from 1E22*S001G1C independently. The operator shall shut off either 1HVY-FN1A or 1HVY*FN1C at his discretion if both fans operate simultaneously.

See notes and Load Profile (Fig. 8.3-14a and b, and 15) for effective loads.

TABLE 8.3-2b (Cont)

(10) Times and load values shown are for information only. Actual setpoints are shown on the setpoint calculations.

(11) See Table 8.3-3 for loading of Division III ESF buses.

(12) Indicated kW demand is based on actual heat release loads of the equipment.

•→3
(13) Chiller 1HVK*CHL1B or D and its lube oil pump are given load sequencing permissive at 160 sec, but due to chillers internal program logic, it would start at 211 sec. Operation of chiller 1HVK*CHL1A or C will be in the following manner.

a. If 1HVK*P1B or D fails to start at time zero (10 sec), chiller 1HVK*CHL1A or C and its associated lube oil pump shall start automatically after 211 sec.

b. If there is low chilled water flow (O153 GPM) thru chiller 1HVK*CHL1B or D at any time during diesel loading, chiller 1HVK*CHL1A or C start will be initiated after 30 sec. If diesel sequence timer has already timed out (150 sec.), chiller 1HVK*CHL1A or C will start after an additional 51 sec. time delay.

c. If the normal chilled water flow thru chiller 1HVK*CHL1B or D is established, i.e. 1HVK*CHL1B or D started operating satisfactorily, then 1HVK*CHL1A or C and its associated pumps, fans, and a/c units will not start.

(14) The time indicated in this column includes 30 sec time delay after signal initiation of low chilled water flow thru chiller 1HVK*CHL1B or D.

(15) The time indicated in this column includes 20 sec time for valve opening.

(16) The time indicated in this column includes 160 sec for chiller initiation signal.

(17) With circuit breaker closed, this load starts, stops and/or modulates automatically to maintain the control room temperature at set point.

•→15 •→11
(18) ENB-INV01A (01A1) and ENB-INV01B (01B1) are conservatively assumed operating on the 125 Vdc supply rather than the 480 Vac source. Thus these loads are reflected in the ENB-CHRGR1A and CHGR1B loading.

(19) Loading on the chargers ENB-CHGR1A and ENB-CHGR1B assumed to maximum loading of 47.5KVA for the first 10 minutes, after which the loading is assumed to drop to 32.4KVA.

11←• 3←• •→12
(20) A margin is added to each step to allow for minor variations in fan BHP due to pitch settings to minimize USAR updates.

12←•
(21) ENB-INV01A (01A1) and ENB-INV01B (01B1) are divisionally redundant Vital Bus inverters. Only one of the two inverters will be in service for a division at one time.

15←•
(22) These loads have divisionally redundant loads supplied by EGS-EG1B.

Table 8.3-3
HPCS DIESEL GENERATOR LOADING DURING A DBE

Description	EquipName	KVA Connected	HP	Percent Load	Maximum Running KW
HPCS pump motor	E22-C001	2181.0	2500.0	92.9	1862.4
Margin	MCCS002-MARGIN	6.1		90.0	4.6
Gen. Vent Supply Fan	HVP-FN6C	1.5	1.0	90.0	0.9
120 VAC Dist. Pnl.	SCV-XDS002	15.0		19.0	2.3
Standby service water pump room vent fan	HVY-FN1C	7.6	7.5	100.0	6.6
HPCS pump & room Unit Cooler	HVR-UC5	49.4	50.0	75.2	32.0
Fuel Oil xfer pump	EGF-P1C	3.6	3.0	100.0	2.9
Gen. Battery Room Exhaust Fan	HVC-FN3F	2.0	1.5	100.0	1.5
Gen. Battery Room Exhaust Fan	HVC-FN3C	2.0	1.5	100.0	1.5
Misc. Motor Operated Valves		63.8		100.0	57.4
Turbocharger Lube Oil Pump	E22-S001ACP	1.4	0.7	100.0	0.9
DG Lube Oil Immersion Heater @ 480V	E22-S001GSH	3.3		100.0	3.3
120 VAC Dist Pnl.	E22-S002PNL	10.0		38	3.0
DG Battery Charger	E22-S001CGR	25.0		100.0	20.0
HPCS Discharge Line Fill Pump	E22-C003	4.8	5.0	100.0	4.3
DG Circulating Oil Pump	E22-S001COP	1.8	1.0	100.0	1.0
Transformer losses 225KVA @ 3.3%Z	E22-S003	7.4		100.0	6.7
DG IMRS heater @ 480V	E22-S001DGH	16.3		100.00	16.3
	Total Initial Load	2402.0			2027.56
20 second load Block					
DG Room Vent Fan (delayed approximately 20 sec from diesel start.)	HVP-FN3A	90.8	100.0	94.2	76.2
	Subtotal.				2103.76
	20 sec. Total load				
30 second load Block					
Standby Service Water Pump Motor	SWP-P2C	420.0	450.0	90.6	325.4
Standby Service Water Pump discharge valve	SWP-MOV40C	1.6	0.7	100.0	1.4
	30 sec. subtotal				326.8
	Max load after 30 sec.	2914.4			2430.60
Less normally closed valves not required to operate for LOCA.					35.8
Adjusted Total					2394.78
Less all MOV loads. Max operating time is approximately 90 seconds which impacts 7 KW only.					58.9
					2371.74
HPCS continuous rating*					2600.0
HPCS 2,000 hr/yr rating**					2850.0
HPCS generator 30-min rating**					3050.0

*The continuous rating is subject to a 10% overload for 2 hrs out of a 24 hr period of operation.

**The 2000 hr/yr and 30-min ratings are not subject to overload.

TABLE 8.3-4

125-V DC SAFETY-RELATED BATTERY 1ENB*BAT01A
(ASSOCIATED WITH DIESEL GENERATOR 1EGS*EG1A)

•→13
•→1•→10 10←•1←•

AMPERAGE REQUIREMENTS AND MINIMUM BATTERY TERMINAL VOLTAGES PER TIME INTERVAL AFTER AC POWER LOSS

	TIME (Min)			
	0-1	1-45	45-239	239-240
Load (amps)	440	310	225	335
Volts (mins)	112.5	112.5	112.5	112.5

DESCRIPTION OF LOADS

The peak amperage value for each time interval is the summation of the emergency loads that are required to operate during the given interval following the loss of AC power. These loads are Standby 4.16 KV switchgear, 480 V load centers, 125 VDC switchgear, standby diesel generators and standby instrument buses.
13←•

TABLE 8.3-5

125-V DC SAFETY-RELATED BATTERY 1ENB*BAT01B
(ASSOCIATED WITH DIESEL GENERATOR 1EGS*EG1B)

•→13

AMPERAGE REQUIREMENTS AND MINIMUM BATTERY TERMINAL VOLTAGES PER TIME INTERVAL AFTER AC POWER LOSS

	TIME (Min)			
	0-1	1-45	45-239	239-240
•→1 Load (amps)	365	305	225	335
Volts (mins)	113.23	113.23	113.23	113.23

1←•

DESCRIPTION OF LOADS

The peak amperage value for each time interval is the summation of the emergency loads that are required to operate during the given interval following the loss of AC power. These loads are Standby 4.16 KV switchgear, 480 V load centers, 125 VDC switchgear, standby diesel generators and standby instrument buses.

13←•

TABLE 8.3-6

•→12

125-V DC SAFETY-RELATED BATTERY E22-S001BAT
(ASSOCIATED WITH HPCS)

•→10

AMPERAGE REQUIREMENTS AND MINIMUM BATTERY TERMINAL VOLTAGES
PER TIME INTERVAL AFTER AC POWER LOSS

0-1 Min	1-120 Min
116 A	44 A
116 volts	116 volts

12←•

DESCRIPTION OF LOADS

The peak amperage value for each time interval is the summation of the emergency loads that are required to operate during the given interval following the Loss of AC Power. These loads are Diesel Engine Control, Field Flashing, Solenoid Valves, Switchgear Breakers, Relays, HPCS Logic Panel, and Auxiliaries.

10←•

TABLE 8.3-7

NON-CLASS 1E EQUIPMENT SUPPLIED FROM CLASS 1E BUSES

Load	Description	Total Load	Voltage	Class 1E Bus	Function
1BYS-CHGR1A	Normal battery charger (battery 1BYS-BAT01A)	80 kVA	480	1EJS*SWG1A	To allow recharging of normal batteries following sustained loss of offsite power.(1)
1BYS-CHGR1B	Normal battery charger (battery 1BYS-BAT01B)	80 kVA	480	1EJS*SWG1B	To allow recharging of normal batteries following sustained loss of offsite power.(1)
1IHS-CHGR1D	Information handling system battery charger (battery 1IHS-BAT01D)	80 kVA	480	1EJS*SWG2B	Turbine and auxiliary building loads which may be restarted during loss of offsite power.(1)
1NHS-MCC101	Normal motor control center for turbine mezzanine level and auxiliary building	186 kVA	480	1EJS*SWG1B	Turbine and auxiliary building loads which may be restarted during loss of offsite power.(1)
1NHS-MCC102A	Normal motor control center for auxiliary and turbine buildings	189 kVA	480	1EJS*SWG2A	Turbine and auxiliary building loads which may be restarted during loss of offsite power.(1)
1NHS-MCC102B	Normal motor control center for auxiliary and turbine buildings	189 kVA	480	1EJS*SWG2B	Turbine and auxiliary building loads which may be restarted during loss of offsite power.(1)
1HVR-UC1C	Containment unit cooler	150 hp	480	1EJS*SWG2B	To furnish qualified protection for penetration circuit to in-containment unit cooler.(1)
Various	Unqualified heaters furnished with Class 1E MOVs	-	120	Various 120 V distribution panelboards	To provide heat to MOV motor and limit switch compartment to reduce condensation.(2)
1C71-P001	RPS bus	25 kVA (estimate)	120	1RPS*XRC10A1	RPS bus is energized from alternate source of power, Class 1E voltage regulating transformer, to ensure availability of NMS during loss of offsite power.(3)

TABLE 8.3-7 (cont'd)

Load	Description	Total Load	Voltage	Class 1E Bus	Function
1C71-P002	RPS bus	25 Kva (estimate)	120	1RPS*XRC10B1	RPS bus is energized from alternate source of power, Class 1E voltage regulating transformer, to ensure availability of NMS during loss of offsite power. (3)
•→8					
1IHA-PNL1	Control building data acquisition system	N/A	120	1EHS*MCC8A	Monitoring the status of HVK chilled water pumps (A, C) and HVAC flow switches (A). (11)
1IHA-PNL1	Control building data acquisition system	N/A	120	1EHS*MCC8B	Monitoring the status of HVK chilled water pumps (B, D) and HVAC flow switches (B). (11)
1IHA-PNL1	Control building data acquisition system	N/A	120	1EHS*MCC14A	Monitoring the status of HVK chiller condenser recirc pumps (A). (11)
1IHA-PNL1	Control building data acquisition system	N/A	120	1EHS*MCC14B	Monitoring the status of HVK chiller condenser recirc pumps (B, D). (11)
1IHA-PNL1	Control building data acquisition system	N/A	120	1SCV*PNL8A1	Monitoring the status of HVK chiller safety controls (A, C). (11)
1IHA-PNL1	Control building data acquisition system	N/A	120	1SCV*PNL8B1	Monitoring the status of HVK chiller safety controls (B). (11)
8←•					
1LAC-XLC9	Main control room lighting system transformer	15 kVA	480	1EHS*MCC14A	To furnish 20% lighting in the main control room upon loss of non-Class 1E sources of power to remaining 80%. (4)
1LAC-XLC9	Main control room lighting system transformer	15 kVA	480	1EHS*MCC14B	To furnish 20% lighting in the main control room upon loss of non-Class 1E sources of power to remaining 80%. (4)
1MHR*CRN1	Polar crane - reactor building	130 kVA	480	1EJS*LDC2A	Used for maintenance (5)
1MHW-CRN2A	Monorail – standby cooling tower	10 kVA	480	1EHS*MCC16A	Used for maintenance (6)
1MHW-CRN2B	Monorail - standby cooling tower	10 kVA	480	1EHS*MCC16B	Used for maintenance (6)

TABLE 8.3-7 (Cont)

Load	Description	Total Load	Voltage	Class 1E Bus	Function
Various	Non-Class 1E slide wire transducers	-	125	Various control circuits	Valve position indication on selected RHR valves(7)
•→6					
Various	Non-Class 1E limit switches	-	120,24	Various control circuits	Valve position indication(8)
6←• •→13					
1SWP*P2AH	Non-Class 1E motor heater	400 VA	120	1SCV*PNL14A1	Humidity control(9)
1SWP*P2BH	Non-Class 1E motor heater	400 VA	120	1SCV*PNL14B1	Humidity control(9)
1SWP*P2CH	Non-Class 1E Motor heater	400 VA	120	1E22*S002PNL	Humidity control(9)
1SWP*P2DH	Non-Class 1E motor heater	400 VA	120	1SCV*PNL14B1	Humidity control(9)
13←• •→6					
1SWP-SOV600A	Control solenoid for 1SWP*AOV599	60 VA	120	1VBS*PNL01A	Energize to close valve 1SWP*AOV599 (10).
1SWP-SOV600B	Control solenoid for 1SWP*AOV599	60 VA	120	1VBS*PNL01A	Energize to close valve 1SWP*AOV599 (10).
•→16					
1SWP-SOV601	Control solenoid for 1SWP*AOV599	24 VA	120	1VBS*PNL01A	Energize to open valve 1SWP*AOV599 (10).
1SWP-SOV602A	Control solenoid for 1SWP*AOV599	24 VA	120	1EHS*MCC16A	Deenergize when DIV I is not available to auto open valve 1SWP*AOV599 (10).
1SWP-SOV602B	Control solenoid for 1SWP*AOV599	24 VA	120	1EHS*MCC16B	Deenergize when DIV II is not available to auto open valve 1SWP*AOV599 (10).
6←• 16←•					
E51-MOVF063	Inboard Isolation Valve	8 HP	480	EHS-MCC2L	Provides Div. I power via E51-SW63 for Main Control Room fire event when Div. II power is not available (16).

TABLE 8.3-7 (Cont)

Load	Description	Total Load	Voltage	Class 1E Bus	Function
•→16 •→13 •→6 1SWP-SOV602C	Control solenoid for 1SWP*AOV599	24 VA	120	E22-S002	Energize when valve 1SWP*MOV40C is open to auto open valve 1SWP*AOV599 (10).
6←• 13←• 16←• •→9 •→8 1RPS-PNL2B	RPS-EPA Monitoring	NA	120	1EHS*MCC14B	Monitoring voltage and frequency (14)
9←• 1E31-TRSR608	Leak detection area ambient temperature recorder	120 VA	120	1VBS*PNL01A	Records ambient temperature in various areas of the plant and provides a high temperature alarm
•→16 16←• C11-TRR018-1 C11-TRR018-2 C11-TRR018-3 and C11-TRR018-4	CRD Temperature recorder	296 VA	120	1VBS*PNL01A	Records CRD temperatures and provides common high temperature alarm in the main control room. (12)
1JRB*DRA1	Upper containment airlock	750 VA	120	1EHS*MCC2K	Access to containment.(13)
1JRB*DRA2	Lower containment airlock	750 VA	120	1EHS*MCC8B	Access to containment.(13)
E31-FYN021-1 and E31-FTN021	Drywell cooler condensate drain flow transmitter	120 VA	120	SCV*PNL2B1	Power drywell cooler condensate flow element E31-FYN021-1 and E31-FTN021
8←• •→12 EGA-SOV82A	DG rear air start compressor moisture separator solenoid drain valve	15 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator rear air compressor moisture separator EGA-TRP14A drain (15).
EGA-SOV84A	DG rear air start compressor pre-filter solenoid drain valve	40 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator rear air compressor particulate filter EGA-FLT11A drain (15).
12←•					

TABLE 8.3-7 (Cont)

Load	Description	Total Load	Voltage	Class 1E Bus	Function
•→12					
EGA-SOV86A	DG rear air start compressor coalescing filter solenoid drain valve	40 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator rear air compressor coalescing filter EGA-FLT13A drain (15).
EGA-SOV83A	DG forward air start compressor moisture separator solenoid drain valve	15 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator forward air compressor moisture separator EGA-TRP15A drain (15).
EGA-SOV85A	DG forward air start compressor prefilter solenoid drain valve	40 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator forward air compressor particulate filter EGA-FLT12A drain (15).
EGA-SOV87A	DG forward air start compressor coalescing filter solenoid drain valve	40 VA	120	EHS-MCC15A	Automatic drain for Division I diesel generator forward air compressor coalescing filter EGA-FLT14A drain (15).
EGA-SOV82B	DG rear air start compressor moisture separator solenoid drain valve	15 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator rear air compressor moisture separator EGA-TRP14B drain (15).
EGA-SOV84B	DG rear air start compressor pre filter solenoid drain valve	40 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator rear air compressor particulate filter EGA-FLT11B drain (15).
EGA-SOV86B	DG rear air start compressor coalescing filter solenoid drain valve	40 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator rear air compressor coalescing filter EGA-FLT13B drain (15).
EGA-SOV83B	DG forward air start compressor moisture separator solenoid drain valve	15 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator forward air compressor moisture separator EGA-TRP15B drain (15).
EGA-SOV85B	DG forward air start compressor pre-filter solenoid drain valve	40 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator forward air compressor particulate filter EGA-FLT12B drain (15).
EGA-SOV87B	DG forward air start compressor coalescing filter solenoid drain valve	40 VA	120	EHS-MCC15B	Automatic drain for Division II diesel generator forward air compressor coalescing filter EGA-FLT14B drain (15).
12←•					
EGS-PNL03A	DG Control Panel Annunciator	7 VA	125	EGO-TS1A EGT-TS1A	Alarms on Extreme High temperature Separate contact provides SR Trip (16)
EGS-PNL03B	DG Control Panel Annunciator	7 VA	125	EGO-TS1B EGT-TS1B	Alarms on Extreme High temperature Separate contact provides SR Trip (16)

TABLE 8.3-7 (Cont)

(1) Selected non-Class 1E loads, as shown on the above list, may be connected to the Class 1E ac system to ensure a supply of power to them during a loss of offsite power. These loads are kept operating during a loss of offsite power to preclude potential equipment damage and to provide additional operational flexibility, but are tripped on LOCA or LOOP and must be manually restarted.

(2) Non-Class 1E heaters mounted in Cat I motor-operated valves and temporarily connected to Class 1E panelboards during the construction phase are de-terminated at the panelboards after equipment release and prior to exceeding 5-percent power.

(3) The Class 1E voltage regulating transformer is connected to the nonsafety-related RPS bus panel-board via two series-connected independent Class 1E electrical protection assemblies (EPAs), and a circuit breaker and normally open contact in the RPS bus panelboard. The RPS bus is normally energized from a non-Class 1E RPS motor generator set. Upon loss of power from the MG set, the RPS bus can be manually transferred, via a switch in the main control room, to the alternate source upon closure of the normally open contact. The two series-connected Class 1E EPAs, each acting independently, will open circuit during overvoltage, undervoltage, or underfrequency. Hence, any adverse circuit condition on the nonsafety-related RPS bus will cause the Class 1E EPAs to open, thus protecting the voltage regulating transformer and its own upstream Class 1E source of power. In addition, protection provided by the Class 1E voltage regulating transformer's internal circuit breaker and by the Class 1E MCC's feeder breaker ensure that an adverse condition on the load side of the transformer will not degrade the performance of the Class 1E source of power. Fault current levels reflected back to the Class 1E MCCs have been evaluated to be only slightly higher than the load's full load current value.

(4) The lighting transformer, although not procured Class 1E, is identical in design and construction to RBS Class 1E small dry-type transformers. It is connected to its Class 1E source of power via a series-connected circuit breaker and fuse in the motor control center. Failure of one of these equivalently sized protection devices does not render the other inoperable, thus satisfying the single failure criterion.

•→10

(5) Power for the Polar Crane and the containment welding receptacle are connected to a Class 1E source which trip on a LOP/LOCA signal.

10←•

(6) The only sources of power in the standby cooling tower are Class 1E. These loads are tripped on LOCA.

(7) Evaluation has demonstrated that open, short, or ground circuits in the slide wire transducer will have no adverse affect on the Class 1E portion of the circuit.

(8) Evaluation has demonstrated that open, short, or ground circuits of the limit switch will have no adverse affect on the Class 1E portion of the circuit. Limit switches are for indicating lights only.

(9) Motor heaters for 1SWP*P2A, 1SWP*P2B, 1SWP*P2C, and 1SWP*P2D are non-Class 1E components connected to a Class 1E source of power via Class 1E cables and Category I raceways. Protection is provided by redundant Class 1E protection devices, such that in the event of a short circuit at the heater and a single failure of a protection device, the redundant device will clear the fault and protect the other Class 1E devices connected to the same Class 1E source of power.

•→6

(10) Coils for SOV's so marked are non-Class 1E components connected to a Class 1E of power via Class 1E cables and CAT I raceways. Protection is provided by redundant Class 1E protection devices such that in the event of a short circuit at the SOV coil and a single failure of a protection device, the redundant device will clear the fault and protect other Class 1E devices connected to the same Class 1E power source.

6←•

TABLE 8.3-7 (Cont)

•→8

(11) Data acquisition panel 1IHA-PNL1 is a non-Class 1E load that is connected to a safety related power source. The Class 1E double-fusing provided in each field input circuit is capable of clearing any fault and protecting the Class 1E power source and other loads connected to it.

(12) C11-TRR018-1 and -2 have been analyzed and/or tested to meet the separation requirements of Regulatory Guide 1.75/IEEE 384 per calculation G13.18.3.6*006.

(13) Containment personnel airlocks 1JRB*DRA1 and 1JRB*DRA2 are non-class 1E components which will be connected to a safety related power source should non-class 1E power fail. The class 1E double fusing circuit provided in the secondary of the control transformer is capable of clearing the fault and protecting the class 1E power source and other loads connected to it.

8←•

•→9

(14) EPA breaker test panel 1RPS-PNL2B is a non-class 1E load which is connected to safety related power source. Class 1E double fusing circuit provided in the test circuits is capable of clearing any fault and protecting the class 1E power source and other loads connected to it.

9←• •→12

(15) Evaluation has demonstrated that open, short, or ground circuits of the Division I or Division II rear or forward air start compressor solenoid valves will have no adverse affect on the Class 1E portion of the circuit.

12←•

(16) Evaluation has demonstrated that open, short, or ground circuits of the Non safety annunciator circuit switched by the Class 1E temperature switches will not have an adverse affect on the Class 1E trip circuit switched by other contacts on same switch.

TABLE 8.3-8

DC CONTROL POWER SOURCE FOR CLASS 1E SWITCHGEAR

Bus Identification No.	DC Control Power Source
4.16-kV Switchgear	
1ENS*SWG1A	1ENB*SWG1A
1ENS*SWG1B	1ENB*SWG1B
1E22*S004	1E22*S001BAT
1NNS-SWG1A	1BYS-SWG1A
1NNS-SWG1B	1BYS-SWG1B
1NNS-SWG1C	1BYS-SWG1A/1BYS-SWG1B
1ENS*SWG2A	1ENB*SWG1A
1ENS*SWG3A	1ENB*SWG1A
1ENS*SWG3B	1ENB*SWG1A
1ENS*SWG2B	1ENB*SWG1B
1ENS*SWG4A	1ENB*SWG1B
1ENS*SWG4B	1ENB*SWG1B
480-V Load Centers	
1EJS*LDC1A	1ENB*SWG1A
1EJS*LDC1B	1ENB*SWG1B
1EJS*LDC2A	1ENB*SWG1A
1EJS*LDC2B	1ENB*SWG1B
1E22*S002	1E22*S001BAT
125-V DC Switchgear	
1ENB*SWG1A	1ENB*BAT01A
1ENB*SWG1B	1ENB*BAT01B
1BYS-SWG1A	1BYS-BAT01A1/1BYS-BAT01A2
1BYS-SWG1B	1BYS-BAT01B1/1BYS-BAT01B2

TABLE 8.3-9

SEPARATION CRITERIA ALLOWABLE VERSUS TESTED

Configuration Description	Minimum Allowable Spacing w/o Barrier	Tested Spacing
Horizontal Tray to Horizontal Tray	1 ft H 1 ft H	6 in H 9 in V
Riser Tray to Riser Tray	9 in	6 in
Horizontal Tray to Vertical Riser	9 in	0 in
Riser to 1E Conduit	1 in 1 in	0 in 1 in
Riser to Non-1E Conduit	1 in 1 in	0 in 1 in
Horizontal Tray to 1E Conduit	1 in	1 in
Horizontal Tray to Non-1E Conduit	1 in	1 in
Cable to Cable	1 ft	6 in H 9 in H 6 in H
Cable to Horizontal Tray	1 ft	6 in H 9 in V
Cable to Vertical Tray	1 ft	6 in
Cable to Non-1E Conduit	1 in	1/4 in

TABLE 8.3-9 (Cont)

Configuration Description	Minimum Allowable Spacing w/o Barrier	Tested Spacing
Cable to 1E Conduit	1 in	1/4 in
Conduit to Conduit	1/4 in (1/8 in at Fittings)	1/4 in
Wrapped Cable to Unwrapped Cable	0 in	0 in