Charles H. Cruse
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Calvert Cliffs Nuclear Power Plant
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410 495-4455

BGE

A Member of the
Constellation Energy Group

March 3, 2000

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Request for Additional Information Concerning Diesel Generator 1A Light Load Issue

REFERENCES:

(a) Telephone Conference between Mr. B. S. Montgomery, et.al. (BGE) and Mr. A. W. Dromerick, et.al. (NRC), dated February 28, 2000, same subject

(b) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated February 18, 2000, "License Amendment Request: Unreviewed Safety Question – Diesel Generator 1A Light Load"

(c) Letter from Mr. J. A. Tiernan (BGE) to NRC Document Control Desk, dated July 5, 1988, "Response to NRC Bulletin 88-04: Potential Safety-Related Pump Loss"

This letter provides the information we agreed to provide you in the February 28, 2000 teleconference (Reference a). This information supports and/or clarifies the information provided in Reference (b).

Requested Information:

1. *Identify those Chapter 14 scenarios where sufficient safety-related loads would not normally be running to satisfy the minimum load requirement for Diesel Generator (DG) 1A (~ eight hours into the event).*

BGE Response:

To evaluate the Updated Final Safety Analysis Report Chapter 14 events, a number of judgments have to be made. Of the 25 operational occurrences, postulated events, and postulated occurrences described in Chapter 14 only six assume a loss of offsite power. Therefore, the evaluation focuses only on these six events. These events are loss of feedwater flow (14.6), loss of non-emergency AC (14.10), steam line break (14.14), large break loss of coolant accident (14.17), small break loss of coolant accident (14.17), feedline break (14.26). As shown in Figure 1, four of the events do not

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have sufficient safety-related loads without operator action. Note that the first three items on Figure 1 are not Chapter 14 events.

2. *Provide a list of the loads the operator could use to provide minimum load to DG 1A.*

BGE Response:

See Attachment (1) for a list of the safety-related loads the operator could use to meet the minimum load requirement.

3. *For loads that could be used, state why running these loads would not harm the equipment or worsen the plant response to the accident.*

BGE Response:

In response to Nuclear Regulatory Commission Bulletin 88-04 (Reference c), we evaluated the impact of operating our safety-related pumps in recirculation and determined the pump's miniflow design and the plant's operation and maintenance procedures are adequate to protect the pumps. Loads would be started using our existing plant procedures and the decision to use a given load will be made based on the scenario. The loads necessary to deal with the scenario will be loaded onto the bus first, and if load is still below the vendor's recommended load, additional loads will be evaluated and added to the engine as appropriate.

4. *Provide clarification that only safety-related loads are credited for accident analysis.*

BGE Response:

Only safety-related loads are credited for accident analysis and to determine if DG 1A is operable. This does not prohibit our operators from selecting non-safety-related loads if they are available to respond to an actual event. These actions are controlled by plant procedures.

5. *What are the provisions for isolation between the safety-related bus and the non-safety-related loads connected to the bus?*

BGE Response:

The isolation devices that separate non-safety-related loads from the safety-related bus are safety-related breakers installed per Institute of Electrical and Electronic Engineers 384, 1974.

Should you have questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

CHC/DJM/bjd

Attachment: (1) Safety-Related Load List Available for Diesel Generator 1A

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
A. W. Dromerick, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
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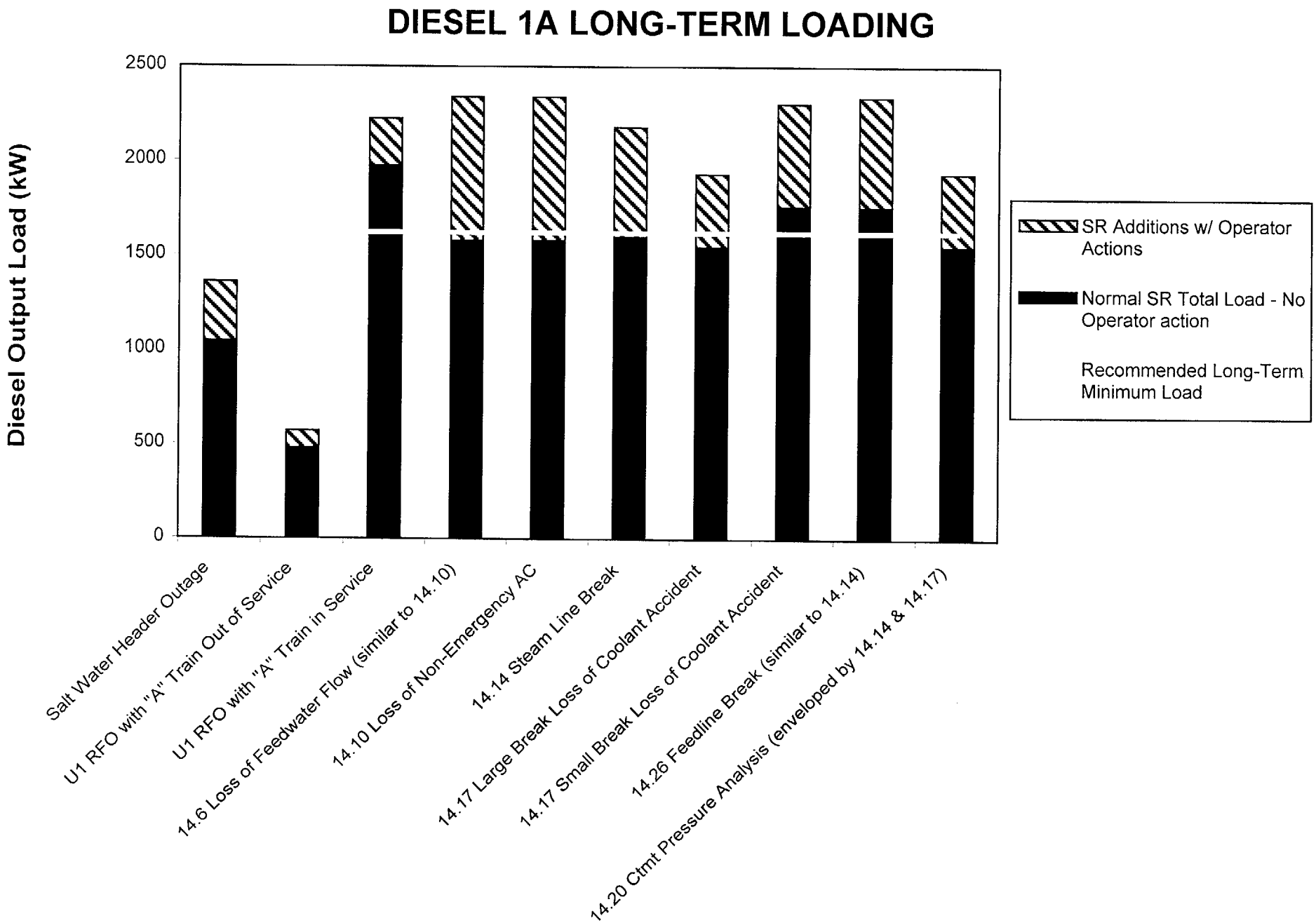

Figure 1

Dg1a-lo2.xls SR Chart

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ATTACHMENT (1)

SAFETY-RELATED LOAD LIST

AVAILABLE FOR DIESEL GENERATOR 1A

OPS TURNOVER LOG BASIS FOR DIESEL 1A MINIMUM LOAD

Chapter 14 and Other Scenarios

Outdoor temperature 50 F to minimize load total. Columns total the kW for Safety Related equipment that can be operated long term for the scenario.

Load Data						Complete Load List						Salt Water Header Outage						U1 RFO with "A" Train in Service					
	1.0	NSR Reliability & Load Factor	Load	Nameplate		Single Failure Assumed: none						Single Failure Assumed: none						Single Failure Assumed: none					
Breaker Number	No.	Load Description	Safety Class	NP HP	NP KVA	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks
152-1105	13	Salt Water Pump alone (16,000 gpm, 410 bhp, 331 kW)	SR	450	-	0	0	X		0	X		0	0	X		0	X		0	0	X		0	X	
152-1112	11	Salt Water Pump alone (16,000 gpm, 400 bhp, 318 kW)	SR	450	-	318	318	X		318	X		0	0	X		0	X		318	318	X		318	X	
152-1105	13	Salt Water Pump alone (10,150 gpm, 345 bhp, 279 kW)	SR	450	-	0	318	X		318	X		0	0	X		0	X		0	318	X		318	X	
152-1112	11	Salt Water Pump alone (10,150 gpm, 340 bhp, 270 kW)	SR	450	-	0	318	X		318	X		0	0	X		0	X		0	318	X		318	X	
152-1109	11	Service Water Pump (5030 gpm = calc - 10%, 320 bhp, 254 kW)	SR	400	-	254	572	X		572	X		0	0	X		0	X		0	318	X		318	X	
152-1109	11	Service Water Pump (1700 gpm min, 240 bhp, 190 kW)	SR	400	-	0	572	X		572	X		0	0	X		0	X		190	508	X		508	X	TB Isolated, 1 CAC
152-1111	13	Service Water Pump (2nd on same hdr, both @ 1700 gpm, 126 kW adder)	SR	400	-	126	698	X	126	824	X	2nd CAN be run per PES *	0	0	X	190	190	X	2nd CAN be run per PES *	0	508	X	126	634	X	2nd CAN be run per PES *
152-1116	13	AFW Pump (155 gpm recirc, 310 bhp, 248 kW)	SR	500	-	248	945	X		1071	X		248	248	X		438	X		248	756	X		882	X	
152-1104	11	LPSI Pump (40 gpm min recirc flow, 191 bhp, 149 kW)	SR	400	-	149	1094	X		1220	X		0	248	X		438	X		0	756	X		882	X	
152-1104	11	LPSI Pump (1500 gpm RFO reduced inventory, 240 bhp, 187 kW)	SR	400	-	0	1094	X		1220	X		0	248	X		438	X		187	943	X		1069	X	reduced inventory
152-1104	11	LPSI Pump (3000 gpm RFO full inventory, 330 bhp, 258 kW)	SR	400	-	0	1094	X		1220	X		0	248	X		438	X		0	943	X		1069	X	
152-1108	11	HPSI Pump (50 gpm recirc, 190 bhp, 158 kW)	SR	400	-	158	1252	X		1378	X		0	248	X		438	X		158	1100	X		1226	X	
152-1110	13	HPSI Pump (must stay on B train due to piping/room)	SR	400	-	0	1252	X		1378	X		0	248	X		438	X		0	1100	X		1226	X	
52-1106	11	Component Cooling Pump (1000 gpm min flow, 130 bhp, 101 kW)	SR	150	-	101	1353	X		1479	X		101	349	X		539	X		101	1201	X		1327	X	
52-1116	13	Component Cooling Pump (backup)	SR	150	-	0	1353	X		1479	X		0	349	X		539	X		0	1201	X		1327	X	
52-1102	11	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	92	1445	X		1571	X		92	440	X		630	X		92	1293	X		1419	X	
52-1102	11	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	0	1445	X		1571	X		0	440	X		630	X		0	1293	X		1419	X	
52-1114	12	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	92	1536	X		1662	X		92	532	X		722	X		92	1385	X		1511	X	
52-1114	12	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	0	1536	X		1662			0	532	X		722	X		0	1385	X		1511	X	
152-1107	11	Ctmt Spray Pump (50-100 gpm recirc, 103 bhp, 86 kW, no RAS)	SR	200	-	86	1623	X		1749			0	532	X		722	X		86	1471	X		1597	X	
152-1107	11	Ctmt Spray Pump (1350 gpm recirc, 160 bhp, 130 kW, no RAS)	SR	200	-	0	1623			1749			0	532	X		722	X		0	1471	X		1597	X	
52-1122	11	Hydrogen Recombiner (75 kW)	SR	-	75	75	1698			1824			0	532	X	75	797	X	normally off *	0	1471	X	75	1672	X	normally off *
52-1108	11	Control Rm A/C Compressor (cold winter, 10 kW)	SR	100	-	10	1708			1834			10	542	X		807	X		10	1481	X		1682		
52-1110	11	Switchgear Rm A/C Compressor (<50 F won't run)	SR	100	-	0	1708			1834			0	542	X		807	X		0	1481	X		1682		
52-11435	11	Control Room HVAC Unit Fan (41,500 cfm, 42 bhp, 36 kW)	SR	50	-	36	1743			1869			36	578	X		843	X		36	1516	X		1717		
52-12340	F-12	1A Electric Room Exhaust Fan	SR	40	-	35	1778			1904			35	612	X		877	X		35	1551	X		1752		
52-12351	F-10	1A Building Supply Fan	SR	40	-	35	1813			1939			35	647	X		912	X		35	1586	X		1787		
52-1115	11	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 31 kW)	SR	100	-	31	1843			1969			31	678	X		943	X		31	1617	X		1818		
52-1104	13	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 32 kW)	SR	100	-	32	1876			2002			32	710	X		975	X		32	1649	X		1850		
52-1111	11	Vital Battery Charger (many dc loads are NSR, use 6 kW)	SR	-	85	6	1882			2008			6	716	X		981	X		6	1655			1856		
52-1120	14	Vital Battery Charger (many dc loads are NSR, use 4 kW)	SR	-	85	4	1886			2012			4	720	X		985	X		4	1659			1860		
52-11465	11	Control Rm Return Air Fan (27.5 bhp from vendor data, 26 kW)	SR	30	-	26	1912			2038			26	746	X		1011	X		26	1685			1886		
52-12317	1A1 11	1A Radiator Fan (21 kW)	SR	40	-	21	1932			2058			21	767	X		1032	X		21	1706			1907		
52-12318	1A1 12	1A Radiator Fan (21 kW)	SR	40	-	21	1953			2079			21	788	X		1053	X		21	1727			1928		
52-12319	1A1 13	1A Radiator Fan (21 kW)	SR	40	-	21	1974			2100			21	809	X		1074	X		21	1747			1948		
52-12320	1A2 11	1A Radiator Fan (21 kW)	SR	40	-	21	1995			2121			21	829	X		1094	X		21	1768			1969		
52-12321	1A2 12	1A Radiator Fan (21 kW)	SR	40	-	21	2016			2142			21	850	X		1115	X		21	1789			1990		
52-12322	1A2 13	1A Radiator Fan (21 kW)	SR	40	-	21	2037			2163			21	871	X		1136	X		21	1810			2011		
52-11403	11	Control Room Condensor Fan	SR	20	-	17	2054			2180			17	888	X		1153	X		17	1827			2028		
52-11404	11	Salt Water Sys Air Compressor (18 kW)	SR	20	-	18	2071			2197			0	888	X	18	1171	X	starts on SIAS	0	1827		18	2046		starts on SIAS
52-12307	F-1	1A DG Room Vent Fan (18 kW)	SR	20	-	18	2089			2215			18	906	X		1189	X		18	1844			2063		
52-12310	F-3	1A DG Room Vent Fan (18 kW)	SR	20	-	18	2106			2232			18	923	X		1206	X		18	1862			2081		
52-12312	F-2	1A DG Room Vent Fan (18 kW)	SR	20	-	18	2124			2250			18	941	X		1224	X		18	1880			2099		
52-12315	F-4	1A DG Room Vent Fan (18 kW)	SR	20	-	18	2141			2267			18	958	X		1241	X		18	1897			2116		
52-12328	1D32	1A Battery Charger Feed (many dc loads are NSR, use 0 kW)	SR	-	44	0	2141			2267			0	958	X		1241	X		0	1897			2116		
52-1105	11	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	14	2156			2282			0	958	X	14	1255	X	normally off *	0	1897		14	2130		normally off *
52-1121	13	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	14	2170			2296			0	958	X	14	1269	X	normally off *	0	1897		14	2144		normally off *
52-11436	11	Switchgear Rm HVAC Unit Fan (Wyle -5%, 14.55 bhp, 13 kW)	SR	20	-	13	2183			2309			13	971	X		1282	X		13	1910			2157		
52-11450	11	Switchgear Rm Condensor Fan (<50 F won't run)	SR	10	-	0	2183			2309			0	971	X		1282	X		0	1910			2157		
52-11406	11	Boric Acid Pump (40 gpm, 9 bhp lowest on curve, 8 kW)	SR	25	-	8	2191			2317			8	979	X		1290	X		0	1910			2157		assume BAST empty
52-12302	DH-4	1A Building Air Intake Heater	SR	-	70	7	2198			2324			7	986	X		1297	X		7	1917			2164		
52-12331	1P23	1A Distribution Panel	SR	-	15	7	2204			2330			7	993	X		1304	X		7	1924			2171		
52-11427	114	Dist Xfmr 480-208/120V	SR	-	15	6	2210			2336			6	999	X		1310	X		6	1930			2177		
52-11402	11	Penetration Rm Exhaust Fan	SR	5	-	5	2215			2341			5	1003	X		1314	X		5	1934			2181		
52-11413	11	ECCS Pump Rm Exhaust Fan	SR	5	-	5	2220			2346			5	1008	X		1319	X		5	1939			2186		
152-1702	17	Load Center Feeder (transformer losses at no load, 4 kW)	SR	-	1000	4	2224			2350			4	1012	X		1323	X		4	1943			2190		
52-11448	11	ECCS Pump Rm Cooler	SR	4	-	4	2228			2354			4	1016	X		1327	X		4	1947			2194		
152-1114	11A	Load Center Feeder (transformer losses at no load, 3 kW)	SR	-	1000	3	2231			2357			3	1019	X		1330	X		3	1950			2197		
52-11447	11	Control Rm Filter Fan (3 kW)	SR	3	-	3	2234			2360			0	1019	X	3	1333	X	normally off *	0	1950		3	2200		normally off *
52-12336	DH-3	1A 1E Switchgear Room Duct Heater	SR	-	30	3	2237			2363			3	1022	X		1336	X		3	1953			2203		
52-12338	DH-1	1A Battery Room Duct Heater	SR	-	30	3	2240			2366			3	1025	X		1339	X		3	1956			2206		
152-1102	11B	Load Center Feeder (transformer losses at no load, 2 kW)	SR	-	1000	2	2242			2368			2	1027	X		1341	X		2	1958			2208		
52-12337	DH-2	1A Control Room Duct Heater	SR	-	21	2	2244			2370			2	1029	X		1343	X		2	1961			2211		
52-11409	11A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	2	2246			2372			2	1031	X		1345	X		0	1961			2211		assume BAST empty
52-11434	12A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	2	2248			2374			2	1033	X		1347	X		0	1961			2211		assume BAST empty
52-12303	DH-6	1A Non 1E Electric Panel Room Duct Heater	SR	-	18	2	2250			2376			2	1035	X		1349	X		2	1962			2212		
52-12311	UH-19	1A Battery Room Unit Heater	SR	-	16	2	2252			2378			2	1037	X		1351	X		2	1964			2214		
52-11405		Battery Room Exhaust Fan	SR	1.5	-	2	2253			2379			2	1038	X		1352	X		2	1965			2215		
52-12325		1A Battery Room Exhaust Fan	SR	1.5	-	2	2255			2381			2	1040	X		1354	X		2	1967			2217		
52-11441	VU-18A	Service Water Heat Ex Rm Fan	SR	1.5	-	2	2257			2383			2	1042	X		1356	X		2	1969			2219		
52-11440	1C140	Hydrogen Analyzer Sample Pump (1.1 kW)	SR	1	-	1.1	2258			2384			0.0	1042	X	1.1	1357	X	normally off *	0.0	1969		1.1	2220		normally off *
52-12314	ENG 1	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	2259			2385			1.0	1043	X		1358	X		1.0	1970			2221		
52-12316	ENG 2	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	2260			2386			1.0	1044	X		1359	X		1.0	1971			2222		
52-11412	11	AFW Pump Rm Vent Fan	SR	0.75	-	0.9	2260			2386			0.9	1045	X		1360	X		0.9	1972			2223		
							640			**766**				**-575**			**-260**				**352**			**603**		
		SR MARGIN TO SACM EDG 30% LOAD (1620 KW):					**40%**			**47%**				**-36%**			**-16%**				**22%**			**37%**		

NOTES: (1) Asterisk * indicates additional equipment that CAN be run to satisfy EDG min load requirement. (2) HVAC heaters are based on 10% diversity factor for <50 F.

OPS TURNOVER LOG BASIS FOR DIESEL 1A MINIMUM LOAD

Chapter 14 and Other Scenarios

Outdoor temperature 50 F to minimize load total. Columns total the kW for Safety Related equipment that can be operated long term for the scenario.

Load Data						14.6 Loss of Feedwater Flow (similar to 14.10)						14.10 Loss of Non-Emergency AC						14.14 Steam Line Break					
	1.0	NSR Reliability & Load Factor	Load	Nameplate		Chapter 14 Single Failure: none						Chapter 14 Single Failure: none						Chapter 14 Single Failure: HPSI					
Breaker Number	No.	Load Description	Safety Class	NP HP	NP KVA	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks
152-1105	13	Salt Water Pump alone (16,000 gpm, 410 bhp, 331 kW)	SR	450	-	0	0	X		0	X		0	0	X		0	X		0	0	X		0	X	
152-1112	11	Salt Water Pump alone (16,000 gpm, 400 bhp, 318 kW)	SR	450	-	318	318	X		318	X		318	318	X		318	X		318	318	X		318	X	
152-1105	13	Salt Water Pump alone (10,150 gpm, 345 bhp, 279 kW)	SR	450	-	0	318	X		318	X		0	318	X		318	X		0	318	X		318	X	
152-1112	11	Salt Water Pump alone (10,150 gpm, 340 bhp, 270 kW)	SR	450	-	0	318	X		318	X		0	318	X		318	X		0	318	X		318	X	
152-1109	11	Service Water Pump (5030 gpm = calc - 10%, 320 bhp, 254 kW)	SR	400	-	254	572	X		572	X		254	572	X		572	X		254	572	X		572	X	
152-1109	11	Service Water Pump (1700 gpm min, 240 bhp, 190 kW)	SR	400	-	0	572	X		572	X		0	572	X		572	X		0	572	X		572	X	
152-1111	13	Service Water Pump (2nd on same hdr, both @ 1700 gpm, 126 kW adder)	SR	400	-	0	572	X	126	698	X	2nd CAN be run per PES *	0	572	X	126	698	X	2nd CAN be run per PES *	0	572	X	126	698	X	2nd CAN be run per PES *
152-1116	13	AFW Pump (155 gpm recirc, 310 bhp, 248 kW)	SR	500	-	0	572	X	248	946	X	only on until SDC *	0	572	X	248	946	X	only on until SDC *	0	572	X	248	946	X	only on until SDC *
152-1104	11	LPSI Pump (40 gpm min recirc flow, 191 bhp, 149 kW)	SR	400	-	0	572	X		946	X		0	572	X		946	X		0	572	X		946	X	on early, SDC see below
152-1104	11	LPSI Pump (1500 gpm RFO reduced inventory, 240 bhp, 187 kW)	SR	400	-	0	572	X		946	X		0	572	X		946	X		0	572	X		946	X	
152-1104	11	LPSI Pump (3000 gpm RFO full inventory, 330 bhp, 258 kW)	SR	400	-	258	830	X		1204	X	off until SDC	258	830	X		1204	X	off until SDC	258	830	X		1204	X	on for SDC, see above
152-1108	11	HPSI Pump (50 gpm recirc, 190 bhp, 158 kW)	SR	400	-	0	830	X	158	1362	X	normally off *	0	830	X	158	1362	X	normally off *	0	830	X		1204	X	single failure
152-1110	13	HPSI Pump (must stay on B train due to piping/room)	SR	400	-	0	830	X		1362	X		0	830	X		1362	X		0	830	X		1204	X	
52-1106	11	Component Cooling Pump (1000 gpm min flow, 130 bhp, 101 kW)	SR	150	-	101	931	X		1463	X		101	931	X		1463	X		101	931	X		1305	X	
52-1116	13	Component Cooling Pump (backup)	SR	150	-	0	931	X		1463	X		0	931	X		1463	X		0	931	X		1305	X	
52-1102	11	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	92	1022	X		1554	X		92	1022	X		1554	X		92	1023	X		1397	X	optional hi after SIAS cleared
52-1102	11	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	0	1022	X		1554	X		0	1022	X		1554	X		0	1023	X		1397	X	
52-1114	12	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	92	1114	X		1646	X		92	1114	X		1646	X		92	1115	X		1489	X	optional hi after SIAS cleared
52-1114	12	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	0	1114	X		1646			0	1114	X		1646			0	1115	X		1489	X	
152-1107	11	Ctmt Spray Pump (50-100 gpm recirc, 103 bhp, 86 kW, no RAS)	SR	200	-	0	1114	X	86	1732		normally off *	0	1114	X	86	1732		normally off *	0	1115	X	86	1575	X	only on early *
152-1107	11	Ctmt Spray Pump (1350 gpm recirc, 160 bhp, 130 kW, no RAS)	SR	200	-	0	1114	X		1732			0	1114	X		1732			0	1115	X		1575	X	
52-1122	11	Hydrogen Recombiner (75 kW)	SR	-	75	0	1114	X	75	1807		normally off *	0	1114	X	75	1807		normally off *	0	1115	X	75	1650	X	normally off *
52-1108	11	Control Rm A/C Compressor (cold winter, 10 kW)	SR	100	-	10	1124	X		1817			10	1124	X		1817			10	1125	X		1660		
52-1110	11	Switchgear Rm A/C Compressor (<50 F won't run)	SR	100	-	0	1124	X		1817			0	1124	X		1817			0	1125	X		1660		
52-11435	11	Control Room HVAC Unit Fan (41,500 cfm, 42 bhp, 36 kW)	SR	50	-	36	1160	X		1853			36	1160	X		1853			36	1160	X		1695		
52-12340	F-12	1A Electric Room Exhaust Fan	SR	40	-	35	1194	X		1887			35	1194	X		1887			35	1195	X		1730		
52-12351	F-10	1A Building Supply Fan	SR	40	-	35	1229	X		1922			35	1229	X		1922			35	1230	X		1765		
52-1115	11	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 31 kW)	SR	100	-	31	1260	X		1953			31	1260	X		1953			31	1261	X		1796		
52-1104	13	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 32 kW)	SR	100	-	0	1260	X		1953		only on until SDC	0	1260	X		1953		only on until SDC	0	1261	X		1796		only on until SDC
52-1111	11	Vital Battery Charger (many dc loads are NSR, use 6 kW)	SR	-	85	6	1266	X		1959			6	1266	X		1959			6	1267	X		1802		
52-1120	14	Vital Battery Charger (many dc loads are NSR, use 4 kW)	SR	-	85	4	1270	X		1963			4	1270	X		1963			4	1271	X		1806		
52-11465	11	Control Rm Return Air Fan (27.5 bhp from vendor data, 26 kW)	SR	30	-	26	1296	X		1989			26	1296	X		1989			26	1297	X		1832		
52-12317	1A1 11	1A Radiator Fan (21 kW)	SR	40	-	21	1317	X		2010			21	1317	X		2010			21	1317	X		1852		
52-12318	1A1 12	1A Radiator Fan (21 kW)	SR	40	-	21	1338	X		2031			21	1338	X		2031			21	1338	X		1873		
52-12319	1A1 13	1A Radiator Fan (21 kW)	SR	40	-	21	1358	X		2051			21	1358	X		2051			21	1359	X		1894		
52-12320	1A2 11	1A Radiator Fan (21 kW)	SR	40	-	21	1379	X		2072			21	1379	X		2072			21	1380	X		1915		
52-12321	1A2 12	1A Radiator Fan (21 kW)	SR	40	-	21	1400	X		2093			21	1400	X		2093			21	1401	X		1936		
52-12322	1A2 13	1A Radiator Fan (21 kW)	SR	40	-	21	1421	X		2114			21	1421	X		2114			21	1422	X		1957		
52-11403	11	Control Room Condensor Fan	SR	20	-	17	1438	X		2131			17	1438	X		2131			17	1439	X		1974		
52-11404	11	Salt Water Sys Air Compressor (18 kW)	SR	20	-	0	1438	X	18	2149			0	1438	X	18	2149			18	1456	X		1991		
52-12307	F-1	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1456	X		2167			18	1456	X		2167			18	1474	X		2009		
52-12310	F-3	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1473	X		2184			18	1473	X		2184			18	1491	X		2026		
52-12312	F-2	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1491	X		2202			18	1491	X		2202			18	1509	X		2044		
52-12315	F-4	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1508	X		2219			18	1508	X		2219			18	1526	X		2061		
52-12328	1D32	1A Battery Charger Feed (many dc loads are NSR, use 0 kW)	SR	-	44	0	1508	X		2219			0	1508	X		2219			0	1526	X		2061		
52-1105	11	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	0	1508	X	14	2233		normally off *	0	1508	X	14	2233		normally off *	0	1526	X	14	2075		normally off *
52-1121	13	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	0	1508	X	14	2247		normally off *	0	1508	X	14	2247		normally off *	0	1526	X	14	2089		normally off *
52-11436	11	Switchgear Rm HVAC Unit Fan (Wyle -5%, 14.55 bhp, 13 kW)	SR	20	-	13	1521	X		2260			13	1521	X		2260			13	1539	X		2102		
52-11450	11	Switchgear Rm Condensor Fan (<50 F won't run)	SR	10	-	0	1521	X		2260			0	1521	X		2260			0	1539	X		2102		
52-11406	11	Boric Acid Pump (40 gpm, 9 bhp lowest on curve, 8 kW)	SR	25	-	0	1521	X	8	2268		on only briefly *	0	1521	X	8	2268		on only briefly *	0	1539	X	8	2110		on until SDC *
52-12302	DH-4	1A Building Air Intake Heater	SR	-	70	7	1528	X		2275			7	1528	X		2275			7	1546	X		2117		
52-12331	1P23	1A Distribution Panel	SR	-	15	7	1535	X		2282			7	1535	X		2282			7	1553	X		2124		
52-11427	114	Dist Xfmr 480-208/120V	SR	-	15	6	1541	X		2288			6	1541	X		2288			6	1559	X		2130		
52-11402	11	Penetration Rm Exhaust Fan	SR	5	-	0	1541	X	5	2293			0	1541	X	5	2293			0	1559	X	5	2135		on early
52-11413	11	ECCS Pump Rm Exhaust Fan	SR	5	-	5	1545	X		2297			5	1545	X		2297			5	1564	X		2140		
152-1702	17	Load Center Feeder (transformer losses at no load, 4 kW)	SR	-	1000	4	1549	X		2301			4	1549	X		2301			4	1568	X		2144		
52-11448	11	ECCS Pump Rm Cooler	SR	4	-	0	1549	X	4	2305			0	1549	X	4	2305			0	1568	X	4	2148		
152-1114	11A	Load Center Feeder (transformer losses at no load, 3 kW)	SR	-	1000	3	1552	X		2308			3	1552	X		2308			3	1571	X		2151		
52-11447	11	Control Rm Filter Fan (3 kW)	SR	3	-	0	1552	X	3	2311		normally off *	0	1552	X	3	2311		normally off *	0	1571	X	3	2154		might not run *
52-12336	DH-3	1A 1E Switchgear Room Duct Heater	SR	-	30	3	1555	X		2314			3	1555	X		2314			3	1574	X		2157		
52-12338	DH-1	1A Battery Room Duct Heater	SR	-	30	3	1558	X		2317			3	1558	X		2317			3	1577	X		2160		
152-1102	11B	Load Center Feeder (transformer losses at no load, 2 kW)	SR	-	1000	2	1560	X		2319			2	1560	X		2319			2	1579	X		2162		
52-12337	DH-2	1A Control Room Duct Heater	SR	-	21	2	1562	X		2321			2	1562	X		2321			2	1581	X		2164		
52-11409	11A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	2	1565	X		2324		won't empty	2	1565	X		2324		won't empty	2	1583	X		2166		
52-11434	12A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	2	1567	X		2326		won't empty	2	1567	X		2326		won't empty	2	1585	X		2168		
52-12303	DH-6	1A Non 1E Electric Panel Room Duct Heater	SR	-	18	2	1568	X		2327			2	1568	X		2327			2	1586	X		2169		
52-12311	UH-19	1A Battery Room Unit Heater	SR	-	16	2	1570	X		2329			2	1570	X		2329			2	1588	X		2171		
52-11405		Battery Room Exhaust Fan	SR	1.5	-	2	1572	X		2331			2	1572	X		2331			2	1590	X		2173		
52-12325		1A Battery Room Exhaust Fan	SR	1.5	-	2	1573	X		2332			2	1573	X		2332			2	1591	X		2174		
52-11441	VU-18A	Service Water Heat Ex Rm Fan	SR	1.5	-	2	1575	X		2334			2	1575	X		2334			2	1593	X		2176		
52-11440	1C140	Hydrogen Analyzer Sample Pump (1.1 kW)	SR	1	-	0.0	1575	X	1.1	2335		normally off *	0.0	1575	X	1.1	2335		normally off *	0.0	1593	X	1.1	2177		normally off *
52-12314	ENG 1	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	1576	X		2336			1.0	1576	X		2336			1.0	1594	X		2178		
52-12316	ENG 2	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	1577	X		2337			1.0	1577	X		2337			1.0	1595	X		2179		
52-11412	11	AFW Pump Rm Vent Fan	SR	0.75	-	0.9	1578	X		2338			0.9	1578	X		2338			0.9	1596	X		2180		
							-42			**718**				**-42**			**718**				**-24**			**560**		
		SR MARGIN TO SACM EDG 30% LOAD (1620 KW):					**-3%**			**44%**				**-3%**			**44%**				**-1%**			**35%**		

NOTES: (1) Asterisk * indicates additional equipment that CAN be run to satisfy EDG min load requirement. (2) HVAC heaters are based on 10% diversity factor for <50 F.

OPS TURNOVER LOG BASIS FOR DIESEL 1A MINIMUM LOAD

Chapter 14 and Other Scenarios

Outdoor temperature 50 F to minimize load total. Columns total the kW for Safety Related equipment that can be operated long term for the scenario.

Load Data						14.17 Large Break Loss of Coolant Accident						14.17 Small Break Loss of Coolant Accident						14.26 Feedline Break (similar to 14.14)					
	1.0	NSR Reliability & Load Factor	Load	Nameplate		Chapter 14 Single Failure: Diesel						Chapter 14 Single Failure: Diesel						Chapter 14 Single Failure: none					
Breaker Number	No.	Load Description	Safety Class	NP HP	NP KVA	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks	Approx KW	Normal Running Total KW		Add'l KW	Max. Running Total KW		Remarks
152-1105	13	Salt Water Pump alone (16,000 gpm, 410 bhp, 331 kW)	SR	450	-	0	0	X		0	X		0	0	X		0	X		0	0	X		0	X	
152-1112	11	Salt Water Pump alone (16,000 gpm, 400 bhp, 318 kW)	SR	450	-	318	318	X		318	X		318	318	X		318	X		318	318	X		318	X	
152-1105	13	Salt Water Pump alone (10,150 gpm, 345 bhp, 279 kW)	SR	450	-	0	318	X		318	X		0	318	X		318	X		0	318	X		318	X	
152-1112	11	Salt Water Pump alone (10,150 gpm, 340 bhp, 270 kW)	SR	450	-	0	318	X		318	X		0	318	X		318	X		0	318	X		318	X	
152-1109	11	Service Water Pump (5030 gpm = calc - 10%, 320 bhp, 254 kW)	SR	400	-	254	572	X		572	X		254	572	X		572	X		254	572	X		572	X	
152-1109	11	Service Water Pump (1700 gpm min, 240 bhp, 190 kW)	SR	400	-	0	572	X		572	X		0	572	X		572	X		0	572	X		572	X	
152-1111	13	Service Water Pump (2nd on same hdr, both @ 1700 gpm, 126 kW adder)	SR	400	-	0	572	X	126	698	X	2nd CAN be run per PES *	0	572	X	126	698	X	2nd CAN be run per PES *	0	572	X	126	698	X	2nd CAN be run per PES *
152-1116	13	AFW Pump (155 gpm recirc, 310 bhp, 248 kW)	SR	500	-	0	572	X	248	946	X	on until SDC *	0	572	X	248	946	X	on until SDC *	0	572	X	248	946	X	on until SDC *
152-1104	11	LPSI Pump (40 gpm min recirc flow, 191 bhp, 149 kW)	SR	400	-	0	572	X		946	X		0	572	X		946	X	on early, late see HPSI *	0	572	X		946	X	on early, SDC see below
152-1104	11	LPSI Pump (1500 gpm RFO reduced inventory, 240 bhp, 187 kW)	SR	400	-	0	572	X		946	X		0	572	X		946	X		0	572	X		946	X	
152-1104	11	LPSI Pump (3000 gpm RFO full inventory, 330 bhp, 258 kW)	SR	400	-	0	572	X		946	X	only on early	258	830	X		1204	X	might be later than 6 hrs	258	830	X		1204	X	on for SDC, see above
152-1108	11	HPSI Pump (50 gpm recirc, 190 bhp, 158 kW)	SR	400	-	158	729	X		1103	X	stays on, 110 gpm @ 24 hrs	158	987	X		1361	X	on late, or LPSI	158	988	X		1362	X	
152-1110	13	HPSI Pump (must stay on B train due to piping/room)	SR	400	-	0	729	X		1103	X		0	987	X		1361	X		0	988	X		1362	X	
52-1106	11	Component Cooling Pump (1000 gpm min flow, 130 bhp, 101 kW)	SR	150	-	101	830	X		1204	X		101	1088	X		1462	X		101	1089	X		1463	X	
52-1116	13	Component Cooling Pump (backup)	SR	150	-	0	830	X		1204	X		0	1088	X		1462	X		0	1089	X		1463	X	
52-1102	11	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	0	830	X		1204	X		92	1180	X		1554	X	optional hi after SIAS cleared	92	1181	X		1555	X	optional hi after SIAS cleared
52-1102	11	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	13	843	X		1217	X		0	1180	X		1554	X		0	1181	X		1555	X	
52-1114	12	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-	0	843	X		1217	X		92	1272	X		1646	X	optional hi after SIAS cleared	92	1273	X		1647	X	optional hi after SIAS cleared
52-1114	12	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-	13	856	X		1230	X		0	1272	X		1646			0	1273	X		1647		
152-1107	11	Ctmt Spray Pump (50-100 gpm recirc, 103 bhp, 86 kW, no RAS)	SR	200	-	0	856	X		1230	X		0	1272	X	86	1732		only on until SDC *	0	1273	X	86	1733		only on early *
152-1107	11	Ctmt Spray Pump (1350 gpm recirc, 160 bhp, 130 kW, no RAS)	SR	200	-	130	986	X		1360	X	on long term	0	1272	X		1732			0	1273	X		1733		
52-1122	11	Hydrogen Recombiner (75 kW)	SR	-	75	75	1061	X		1435	X	on late	0	1272	X	75	1807		on late if at all *	0	1273	X	75	1808		normally off *
52-1108	11	Control Rm A/C Compressor (cold winter, 10 kW)	SR	100	-	10	1071	X		1445	X		10	1282	X		1817			10	1283	X		1818		
52-1110	11	Switchgear Rm A/C Compressor (<50 F won't run)	SR	100	-	0	1071	X		1445	X		0	1282	X		1817			0	1283	X		1818		
52-11435	11	Control Room HVAC Unit Fan (41,500 cfm, 42 bhp, 36 kW)	SR	50	-	36	1107	X		1481	X		36	1318	X		1853			36	1318	X		1853		
52-12340	F-12	1A Electric Room Exhaust Fan	SR	40	-	35	1142	X		1516	X		35	1353	X		1888			35	1353	X		1888		
52-12351	F-10	1A Building Supply Fan	SR	40	-	35	1176	X		1550	X		35	1387	X		1922			35	1388	X		1923		
52-1115	11	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 31 kW)	SR	100	-	0	1176	X		1550	X	on early	0	1387	X		1922		on early, OFF post RAS	31	1419	X		1954		
52-1104	13	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 32 kW)	SR	100	-	0	1176	X		1550	X	on early	0	1387	X		1922		on early, OFF post RAS	0	1419	X		1954		only on until SDC
52-1111	11	Vital Battery Charger (many dc loads are NSR, use 6 kW)	SR	-	85	6	1182	X		1556	X		6	1393	X		1928			6	1425	X		1960		
52-1120	14	Vital Battery Charger (many dc loads are NSR, use 4 kW)	SR	-	85	4	1186	X		1560	X		4	1397	X		1932			4	1429	X		1964		
52-11465	11	Control Rm Return Air Fan (27.5 bhp from vendor data, 26 kW)	SR	30	-	26	1212	X		1586	X		26	1423	X		1958			26	1455	X		1990		
52-12317	1A1 11	1A Radiator Fan (21 kW)	SR	40	-	21	1233	X		1607	X		21	1444	X		1979			21	1475	X		2010		
52-12318	1A1 12	1A Radiator Fan (21 kW)	SR	40	-	21	1254	X		1628	X		21	1465	X		2000			21	1496	X		2031		
52-12319	1A1 13	1A Radiator Fan (21 kW)	SR	40	-	21	1275	X		1649			21	1486	X		2021			21	1517	X		2052		
52-12320	1A2 11	1A Radiator Fan (21 kW)	SR	40	-	21	1296	X		1670			21	1507	X		2042			21	1538	X		2073		
52-12321	1A2 12	1A Radiator Fan (21 kW)	SR	40	-	21	1317	X		1691			21	1528	X		2063			21	1559	X		2094		
52-12322	1A2 13	1A Radiator Fan (21 kW)	SR	40	-	21	1337	X		1711			21	1548	X		2083			21	1580	X		2115		
52-11403	11	Control Room Condensor Fan	SR	20	-	17	1354	X		1728			17	1565	X		2100			17	1597	X		2132		
52-11404	11	Salt Water Sys Air Compressor (18 kW)	SR	20	-	18	1372	X		1746		starts on SIAS	18	1583	X		2118		starts on SIAS	18	1614	X		2149		
52-12307	F-1	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1389	X		1763			18	1600	X		2135			18	1632	X		2167		
52-12310	F-3	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1407	X		1781			18	1618	X		2153			18	1649			2184		
52-12312	F-2	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1425	X		1799			18	1636	X		2171			18	1667			2202		
52-12315	F-4	1A DG Room Vent Fan (18 kW)	SR	20	-	18	1442	X		1816			18	1653			2188			18	1684			2219		
52-12328	1D32	1A Battery Charger Feed (many dc loads are NSR, use 0 kW)	SR	-	44	0	1442	X		1816			0	1653			2188			0	1684			2219		
52-1105	11	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	14	1456	X		1830			14	1667			2202			0	1684		14	2233		normally off *
52-1121	13	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-	14	1471	X		1845			14	1682			2217			0	1684		14	2247		normally off *
52-11436	11	Switchgear Rm HVAC Unit Fan (Wyle -5%, 14.55 bhp, 13 kW)	SR	20	-	13	1484	X		1858			13	1695			2230			13	1697			2260		
52-11450	11	Switchgear Rm Condensor Fan (<50 F won't run)	SR	10	-	0	1484	X		1858			0	1695			2230			0	1697			2260		
52-11406	11	Boric Acid Pump (40 gpm, 9 bhp lowest on curve, 8 kW)	SR	25	-	0	1484	X	8	1866		only on early *	0	1695		8	2238		only on early *	0	1697		8	2268		on until SDC *
52-12302	DH-4	1A Building Air Intake Heater	SR	-	70	7	1491	X		1873			7	1702			2245			7	1704			2275		
52-12331	1P23	1A Distribution Panel	SR	-	15	7	1497	X		1879			7	1708			2251			7	1711			2282		
52-11427	114	Dist Xfmr 480-208/120V	SR	-	15	6	1503	X		1885			6	1714			2257			6	1717			2288		
52-11402	11	Penetration Rm Exhaust Fan	SR	5	-	5	1508	X		1890			5	1719			2262			0	1717		5	2293		on early *
52-11413	11	ECCS Pump Rm Exhaust Fan	SR	5	-	5	1513	X		1895			5	1724			2267			5	1722			2298		
152-1702	17	Load Center Feeder (transformer losses at no load, 4 kW)	SR	-	1000	4	1517	X		1899			4	1728			2271			4	1726			2302		
52-11448	11	ECCS Pump Rm Cooler	SR	4	-	4	1521	X		1903			4	1732			2275			0	1726		4	2306		
152-1114	11A	Load Center Feeder (transformer losses at no load, 3 kW)	SR	-	1000	3	1524	X		1906			3	1735			2278			3	1729			2309		
52-11447	11	Control Rm Filter Fan (3 kW)	SR	3	-	0	1524	X	3	1909		might not run *	0	1735		3	2281		might not run *	0	1729		3	2312		might not run *
52-12336	DH-3	1A 1E Switchgear Room Duct Heater	SR	-	30	3	1527	X		1912			3	1738			2284			3	1732			2315		
52-12338	DH-1	1A Battery Room Duct Heater	SR	-	30	3	1530	X		1915			3	1741			2287			3	1735			2318		
152-1102	11B	Load Center Feeder (transformer losses at no load, 2 kW)	SR	-	1000	2	1532	X		1917			2	1743			2289			2	1737			2320		
52-12337	DH-2	1A Control Room Duct Heater	SR	-	21	2	1534	X		1919			2	1745			2291			2	1739			2322		
52-11409	11A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	0	1534	X		1919		on only till BAST empty	0	1745			2291		on only till BAST empty	2	1741			2324		
52-11434	12A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75	0	1534	X		1919		on only till BAST empty	0	1745			2291		on only till BAST empty	2	1743			2326		
52-12303	DH-6	1A Non 1E Electric Panel Room Duct Heater	SR	-	18	2	1536	X		1921			2	1747			2293			2	1744			2327		
52-12311	UH-19	1A Battery Room Unit Heater	SR	-	16	2	1537	X		1922			2	1748			2294			2	1746			2329		
52-11405		Battery Room Exhaust Fan	SR	1.5	-	2	1539	X		1924			2	1750			2296			2	1748			2331		
52-12325		1A Battery Room Exhaust Fan	SR	1.5	-	2	1541	X		1926			2	1752			2298			2	1749			2332		
52-11441	VU-18A	Service Water Heat Ex Rm Fan	SR	1.5	-	2	1542	X		1927			2	1753			2299			2	1751			2334		
52-11440	1C140	Hydrogen Analyzer Sample Pump (1.1 kW)	SR	1	-	1.1	1543	X		1928			1.1	1754			2300			1.1	1752			2335		
52-12314	ENG 1	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	1544	X		1929			1.0	1755			2301			1.0	1753			2336		
52-12316	ENG 2	1A Fuel Oil Feed Pump to Engine	SR	0.88	-	1.0	1545	X		1930			1.0	1756			2302			1.0	1754			2337		
52-11412	11	AFW Pump Rm Vent Fan	SR	0.75	-	0.9	1546	X		1931			0.9	1757			2303			0.9	1755			2338		
							-74			**311**				**137**			**683**				**135**			**718**		
		SR MARGIN TO SACM EDG 30% LOAD (1620 KW):					**-5%**			**19%**				**8%**			**42%**				**8%**			**44%**		

NOTES: (1) Asterisk * indicates additional equipment that CAN be run to satisfy EDG min load requirement. (2) HVAC heaters are based on 10% diversity factor for <50 F.

OPS TURNOVER LOG BASIS FOR DIESEL 1A MINIMUM LOAD

Chapter 14 and Other Scenarios

Outdoor temperature 50 F to minimize load total. Columns total the kW for Safety Related equipment that can be operated long term for the scenario.

Load Data						14.20 Ctmt Pressure Analysis (enveloped by 14.14 & 14.17)						
	1.0	NSR Reliability & Load Factor	Load	Nameplate		Chapter 14 Single Failure: Diesel						
Breaker Number	No.	Load Description	Safety Class	NP HP	NP KVA	Approx KW	Running Total KW					Remarks
152-1105	13	Salt Water Pump alone (16,000 gpm, 410 bhp, 331 kW)	SR	450	-							
152-1112	11	Salt Water Pump alone (16,000 gpm, 400 bhp, 318 kW)	SR	450	-							
152-1105	13	Salt Water Pump alone (10,150 gpm, 345 bhp, 279 kW)	SR	450	-							
152-1112	11	Salt Water Pump alone (10,150 gpm, 340 bhp, 270 kW)	SR	450	-							
152-1109	11	Service Water Pump (5030 gpm = calc - 10%, 320 bhp, 254 kW)	SR	400	-							
152-1109	11	Service Water Pump (1700 gpm min, 240 bhp, 190 kW)	SR	400	-							
152-1111	13	Service Water Pump (2nd on same hdr, both @ 1700 gpm, 126 kW adder)	SR	400	-							
152-1116	13	AFW Pump (155 gpm recirc, 310 bhp, 248 kW)	SR	500	-							
152-1104	11	LPSI Pump (40 gpm min recirc flow, 191 bhp, 149 kW)	SR	400	-							
152-1104	11	LPSI Pump (1500 gpm RFO reduced inventory, 240 bhp, 187 kW)	SR	400	-							
152-1104	11	LPSI Pump (3000 gpm RFO full inventory, 330 bhp, 258 kW)	SR	400	-							
152-1108	11	HPSI Pump (50 gpm recirc, 190 bhp, 158 kW)	SR	400	-							
152-1110	13	HPSI Pump (must stay on B train due to piping/room)	SR	400	-							
52-1106	11	Component Cooling Pump (1000 gpm min flow, 130 bhp, 101 kW)	SR	150	-							
52-1116	13	Component Cooling Pump (backup)	SR	150	-							
52-1102	11	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-							
52-1102	11	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-							
52-1114	12	Ctmt Air Cooler (high speed 110,000 cfm normal density, 115 bhp, 92 kW)	SR	125	-							
52-1114	12	Ctmt Air Cooler (low speed normal density, 13.8 bhp, 13 kW)	SR	125	-							
152-1107	11	Ctmt Spray Pump (50-100 gpm recirc, 103 bhp, 86 kW, no RAS)	SR	200	-							
152-1107	11	Ctmt Spray Pump (1350 gpm recirc, 160 bhp, 130 kW, no RAS)	SR	200	-							
52-1122	11	Hydrogen Recombiner (75 kW)	SR	-	75							
52-1108	11	Control Rm A/C Compressor (cold winter, 10 kW)	SR	100	-							
52-1110	11	Switchgear Rm A/C Compressor (<50 F won't run)	SR	100	-							
52-11435	11	Control Room HVAC Unit Fan (41,500 cfm, 42 bhp, 36 kW)	SR	50	-							
52-12340	F-12	1A Electric Room Exhaust Fan	SR	40	-							
52-12351	F-10	1A Building Supply Fan	SR	40	-							
52-1115	11	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 31 kW)	SR	100	-							
52-1104	13	Charging Pump (0-250 psia min RCS, no RAS, 37 bhp, 32 kW)	SR	100	-							
52-1111	11	Vital Battery Charger (many dc loads are NSR, use 6 kW)	SR	-	85							
52-1120	14	Vital Battery Charger (many dc loads are NSR, use 4 kW)	SR	-	85							
52-11465	11	Control Rm Return Air Fan (27.5 bhp from vendor data, 26 kW)	SR	30	-							
52-12317	1A1 11	1A Radiator Fan (21 kW)	SR	40	-							
52-12318	1A1 12	1A Radiator Fan (21 kW)	SR	40	-							
52-12319	1A1 13	1A Radiator Fan (21 kW)	SR	40	-							
52-12320	1A2 11	1A Radiator Fan (21 kW)	SR	40	-							
52-12321	1A2 12	1A Radiator Fan (21 kW)	SR	40	-							
52-12322	1A2 13	1A Radiator Fan (21 kW)	SR	40	-							
52-11403	11	Control Room Condensor Fan	SR	20	-							
52-11404	11	Salt Water Sys Air Compressor (18 kW)	SR	20	-							
52-12307	F-1	1A DG Room Vent Fan (18 kW)	SR	20	-							
52-12310	F-3	1A DG Room Vent Fan (18 kW)	SR	20	-							
52-12312	F-2	1A DG Room Vent Fan (18 kW)	SR	20	-							
52-12315	F-4	1A DG Room Vent Fan (18 kW)	SR	20	-							
52-12328	1D32	1A Battery Charger Feed (many dc loads are NSR, use 0 kW)	SR	-	44							
52-1105	11	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-							
52-1121	13	Ctmt Iodine Filter Unit (20,000 cfm normal density, 16.5 bhp, 14 kW)	SR	75	-							
52-11436	11	Switchgear Rm HVAC Unit Fan (Wyle -5%, 14.55 bhp, 13 kW)	SR	20	-							
52-11450	11	Switchgear Rm Condensor Fan (<50 F won't run)	SR	10	-							
52-11406	11	Boric Acid Pump (40 gpm, 9 bhp lowest on curve, 8 kW)	SR	25	-							
52-12302	DH-4	1A Building Air Intake Heater	SR	-	70							
52-12331	1P23	1A Distribution Panel	SR	-	15							
52-11427	114	Dist Xfmr 480-208/120V	SR	-	15							
52-11402	11	Penetration Rm Exhaust Fan	SR	5	-							
52-11413	11	ECCS Pump Rm Exhaust Fan	SR	5	-							
152-1702	17	Load Center Feeder (transformer losses at no load, 4 kW)	SR	-	1000							
52-11448	11	ECCS Pump Rm Cooler	SR	4	-							
152-1114	11A	Load Center Feeder (transformer losses at no load, 3 kW)	SR	-	1000							
52-11447	11	Control Rm Filter Fan (3 kW)	SR	3	-							
52-12336	DH-3	1A 1E Switchgear Room Duct Heater	SR	-	30							
52-12338	DH-1	1A Battery Room Duct Heater	SR	-	30							
152-1102	11B	Load Center Feeder (transformer losses at no load, 2 kW)	SR	-	1000							
52-12337	DH-2	1A Control Room Duct Heater	SR	-	21							
52-11409	11A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75							
52-11434	12A	Boric Acid Tank Heater (off after BAST empy)	SR	-	6.75							
52-12303	DH-6	1A Non 1E Electric Panel Room Duct Heater	SR	-	18							
52-12311	UH-19	1A Battery Room Unit Heater	SR	-	16							
52-11405		Battery Room Exhaust Fan	SR	1.5	-							
52-12325		1A Battery Room Exhaust Fan	SR	1.5	-							
52-11441	VU-18A	Service Water Heat Ex Rm Fan	SR	1.5	-							
52-11440	1C140	Hydrogen Analyzer Sample Pump (1.1 kW)	SR	1	-							
52-12314	ENG 1	1A Fuel Oil Feed Pump to Engine	SR	0.88	-							
52-12316	ENG 2	1A Fuel Oil Feed Pump to Engine	SR	0.88	-							
52-11412	11	AFW Pump Rm Vent Fan	SR	0.75	-							
		SR MARGIN TO SACM EDG 30% LOAD (1620 KW):										

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