



Herbert Engineering Corp.
Bruce S. Rosenblatt & Associates, Inc.



PREPARED FOR:



U.S. Maritime Administration
1200 New Jersey Avenue
Washington, DC 20590-0001

Contract: DTMA91C1600014

PREPARED BY:

Herbert Engineering Corp.
927 West Street, Suite 202
Annapolis, MD 21401

Rev	Date	Description	Originator	Checked By	Appvd By
-	12/19/16	Initial Issue	FC	NJD	EVR

TITLE:

NSMV Phase 3 Design
Electrical Load Analysis

DOCUMENT NO.

2015-017-03-13

File Path & Name:

Total Sheets:

51

Table of Contents

ELECTRICAL SYSTEM MAIN DATA	3
SUMMARY SHEET	4
ST-1001 - 6600V Main Switchboard 1	7
ST-1002 - 6600V Main Switchboard 2	10
SF-10001 - 450V ER Switchboard 1	13
SF-10002 - 450V ER Switchboard 2	19
ST-1101 - 6600V Acc. Substation FZ 3	25
ST-1102 - 6600V Acc. Substation FZ 1&2	28
ST-1103 - 6600V Acc. Substation FZ 4&5	31
ST-1104 - 6600V Galley Substation	34
SF-11101 - 450V Acc. Substation FZ 3	37
SF-11102 - 450V Acc. Substation FZ 1&2	40
SF-11103 - 450V Acc. Substation FZ 4&5	43
SF-11104 - 450V Galley Substation	46
SE-15000 - 450V Emergency Switchboard	49

ELECTRICAL SYSTEM MAIN DATA																		
	kV	No.	Type	Model	Turbine Power Output (kW) @			Min. Power Output (kWe)	@ Max temp of (Deg C)	Alternator Output (kVA)	Diesel Power Output (kWe)	kW	kVAr					
					15°C	25°C	35°C											
POWER GENERATION																		
Generation [HV]	6.600	4	Diesel MV						45	4728	3783							
Shore Connection [HV]	6.600	1	Shore Power MV								3000							
Shore Connection [LV]	0.450	1	Shore Power LV								350							
Generation [LV - Emerg]	0.450	1	Diesel LV						45	1125	900							
POWER DISTRIBUTION																		
	Bus	kV	Name	Location														
ST-1001	A+B	6.6	6600V Main Switchboard 1	Location - HV Rm. 1									6,482	3,309				
ST-1002	C+D	6.6	6600V Main Switchboard 2	Location - HV Rm. 2									5,696	3,095				
SF-10001	A+B	0.45	450V ER Switchboard 1	Location - ER #1									715	475				
SF-10002	C+D	0.45	450V ER Switchboard 2	Location - ER #2									234	144				
ST-1101	A	6.6	6600V Acc. Substation FZ 3	Location - 4 th Dk Fr. 90 PS									513	244				
ST-1102	B	6.6	6600V Acc. Substation FZ 1&2	Location - 4 th Dk Fr. 123 PS									628	200				
ST-1103	C	6.6	6600V Acc. Substation FZ 4&5	Location - 3 rd Dk Fr. 50 SB									249	174				
ST-1104	D	6.6	6600V Galley Substation	Location - 4 th Dk Fr. 123 SB									597	387				
SF-11101	A	0.45	450V Acc. Substation FZ 3	Location - 4 th Dk Fr. 90 PS									354	137				
SF-11102	B	0.45	450V Acc. Substation FZ 1&2	Location - 4 th Dk Fr. 123 PS									452	98				
SF-11103	C	0.45	450V Acc. Substation FZ 4&5	Location - 3 rd Dk Fr. 50 SB									129	76				
SF-11104	D	0.45	450V Galley Substation	Location - 4 th Dk Fr. 123 SB									425	261				
SE-15000	E	0.45	450V Emergency Switchboard	Location - EDG Room									378	273				
											<table border="1"> <tr> <td>Total Load (Transit 18kts) + 2% losses</td> <td>12,422</td> <td>6,405</td> </tr> <tr> <td>Overall Power Factor</td> <td colspan="2">0.889</td> </tr> </table>		Total Load (Transit 18kts) + 2% losses	12,422	6,405	Overall Power Factor	0.889	
Total Load (Transit 18kts) + 2% losses	12,422	6,405																
Overall Power Factor	0.889																	
LOAD CASES																		
1	Transit 18kts	Max Case																
2	Transit 12kts																	
3	Maneuvering																	
4	Disaster relief																	
5	Harbour																	
6	Idle																	
7	Laid up																	
8	Emergency																	
NETWORK LOSSES (%)		2																
NON-PROP DESIGN MARGIN (%)		15																

Note: The utilization and simultaneity coefficient is the product of two separate parameters.
 - The first is The simultaneity coefficient, which is calculated by dividing The number of devices required to run simultaneously to achieve the design output by the total number of devices assigned to the same service.
 - The second is 1 (100%) in case of continuous service, or any fraction of the unity depending on the estimated percentage of time in service. For such estimate, professional experience and data from previous projects have been used.
 - The same coefficient is then applied to all the devices that have been taken into account in in the calculation.

SUMMARY SHEET				AVAILABLE POWER GENERATING CAPACITY				LOADING FACTORS	Remarks	
				Operating temperature						Driver type
				Driver			Min.Pwr			
				15°C (kW)	25°C (kW)	35°C (kW)	45°C (kW)			
SUMMARY OF AVAILABLE GENERATORS										
No. Avail.	No. Running	Model	Rating							
4										
4			3783				Diesel MV	82% 82% 82% 82%		
								CASE NO. 1 LOAD CASE NO. OF HV GENS NO. OF LV GENS HV/LV INDEPENDENT (Y/N)		
								Transit 18kts 4 N		
								LOAD DATA TOTAL LOAD INDEPENDENT LV LOAD INDEPENDENT HV LOAD EMERGENCY LOAD		
								KW KVA KVAR 12178 13760 6405 2309 2485 919 9869 11291 5486 378 466 273		
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			
								TOTAL LOAD INC 2% LOSSES 12422		
2										
4			3783				Diesel MV	74% 74%		
								CASE NO. 2 LOAD CASE NO. OF HV GENS NO. OF LV GENS HV/LV INDEPENDENT (Y/N)		
								Transit 12kts 2 N		
								LOAD DATA TOTAL LOAD INDEPENDENT LV LOAD INDEPENDENT HV LOAD EMERGENCY LOAD		
								KW KVA KVAR 5497 6236 2944 2011 2211 919 3486 4032 2025 378 466 273		
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			
								TOTAL LOAD INC 2% LOSSES 5607		
4										
4			3783				Diesel MV	56% 56% 56% 56%		
								CASE NO.3 LOAD CASE NO. OF HV GENS NO. OF LV GENS HV/LV INDEPENDENT (Y/N)		
								Maneuvering 4 N		
								LOAD DATA TOTAL LOAD INDEPENDENT LV LOAD INDEPENDENT HV LOAD EMERGENCY LOAD		
								KW KVA KVAR 8256 9404 4503 2335 2512 926 5921 6917 3576 389 475 273		
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			
								TOTAL LOAD INC 2% LOSSES 8421		

SUMMARY SHEET				AVAILABLE POWER GENERATING CAPACITY				LOADING FACTORS	Remarks	
				Operating temperature						Driver type
				Driver			Min.Pwr			
				15°C (kW)	25°C (kW)	35°C (kW)	45°C (kW)			
SUMMARY OF AVAILABLE GENERATORS										
No. Avail.	No. Running	Model	Rating							
	2									
4			3783				Diesel MV	47% 47%		
CASE NO. 4										
LOAD CASE Disaster relief										
NO. OF HV GENS 2										
NO. OF LV GENS										
HV/LV INDEPENDENT (Y/N) N										
LOAD DATA										
TOTAL LOAD KW KVA KVAR										
TOTAL LOAD 3469 3878 1732										
INDEPENDENT LV LOAD 2376 2517 830										
INDEPENDENT HV LOAD 1093 1418 902										
EMERGENCY LOAD 310 387 233										
TOTAL LOAD INC 2% LOSSES 3539										
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			
	1							75%		
4			3783				Diesel MV			
CASE NO. 5										
LOAD CASE Harbour										
NO. OF HV GENS 1										
NO. OF LV GENS										
LOAD DATA										
TOTAL LOAD KW KVA KVAR										
TOTAL LOAD 2764 3138 1487										
INDEPENDENT LV LOAD 1809 1920 643										
INDEPENDENT HV LOAD 955 1274 844										
EMERGENCY LOAD 310 387 233										
TOTAL LOAD INC 2% LOSSES 2819										
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			
	1							37%		
4			3783				Diesel MV			
CASE NO. 6										
LOAD CASE Idle										
NO. OF HV GENS 1										
NO. OF LV GENS										
LOAD DATA										
TOTAL LOAD KW KVA KVAR										
TOTAL LOAD 1377 1537 683										
INDEPENDENT LV LOAD 1042 1085 304										
INDEPENDENT HV LOAD 336 506 379										
EMERGENCY LOAD 219 309 219										
TOTAL LOAD INC 2% LOSSES 1405										
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1			900			900	Diesel LV			

SUMMARY SHEET				AVAILABLE POWER GENERATING CAPACITY				LOADING FACTORS	Remarks	
				Operating temperature						Driver type
				Driver			Min.Pwr			
				15°C (kW)	25°C (kW)	35°C (kW)	45°C (kW)			
SUMMARY OF AVAILABLE GENERATORS										
No. Avail.	No. Running	Model	Rating							
4			3783					CASE NO. 7 LOAD CASE Laid up NO. OF HV GENS 1 NO. OF LV GENS		
1	1		3000			3000	Shore Power MV	42%		
1			350				Shore Power LV			
1			900			900	Diesel LV			
4			3783				Diesel MV			
1			3000			3000	Shore Power MV			
1			350				Shore Power LV			
1	1		900			900	Diesel LV	92%		
								CASE NO. 8 LOAD CASE Emergency NO. OF HV GENS NO. OF LV GENS 1 LOAD DATA TOTAL LOAD KW KVA KVAR INDEPENDENT LV LOAD 305 927 876 INDEPENDENT HV LOAD 919 935 -175 EMERGENCY LOAD 810 967 528 TOTAL LOAD INC 2% LOSSES 1248		
								Note: EDG running Max load independently		

Tag No.	ST-1001 6600V Main Switchboard 1 Location - HV Rm. 1	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	Incomer from DG#1 Genset							1.0	139	82	1.0	139.0	82	1.0	124.0	73		Link from SF-10001 Bus A Link from ST-1101
	ER Transformer #1 A Accommodation Substation FZ 3 Interconnect with Bus C – Main Switchboard 2 Earthing Transformer 1 Spare Feeder PEM #1							1.0	513	244	1.0	513.5	244	1.0	510.2	242		
		510.9	4500.0	5000.0	96.2	0.89	4677.8	0.9	4350	2229	0.5	2338.9	1198	0.3	1403.3	719		
	Starters																	
	A/C Compressor #1	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130	81	0.7	130.2	81	0.7	130.2	81		
	Bus A								5133.0	2635.5		3121.6	1605.0		2167.8	1114.4		
	BUSTIE	Open																
	Bus B								1349.0	674.0		1306.4	648.6		2582.5	1373.3		
	Feeders																	
	Incomer from DG#2 Genset							1.0	590.4	393.3	1.0	547.7	367.9	1.0	583.4	390.3		Link from SF-10001 Bus B Link from ST-1102
	Incomer from Aux DG Genset ER Transformer #1B Accommodation Substation FZ 1&2 Interconnect with Bus D – Main Switchboard 2 Earthing Transformer 2 Spare Feeder Bow Thruster							1.0	628.4	200.0	1.0	628.4	200.0	1.0	681.4	229.3		
		167.6	1425.0	1600.0	96.0	0.87	1484.4							0.8	1187.5	673.0		
	Starters																	
	A/C Compressor #2	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130.2	80.7	0.7	130.2	80.7	0.7	130.2	80.7		
	Total load HV Switchboard #1								6482	3309		4428	2254		4750	2488		

Tag No.	Load Description	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	
ST-1001 6600V Main Switchboard 1 Location - HV Rm. 1																	
	Feeders Incomer from DG#1 Genset ER Transformer #1 A Accommodation Substation FZ 3 Interconnect with Bus C – Main Switchboard 2 Earthing Transformer 1 Spare Feeder PEM #1	510.9	4500.0	5000.0	96.2	0.89	4677.8	1.0	81	41	1.0	72.5	40	1.0	72.5	40	Link from SF-10001 – Bus A Link from ST-1101
	Starters A/C Compressor #1	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130	81	0.7	130.2	81	0.3	24.2	15	
	Bus A								862.0	363.1		709.6	360.0		293.8	120.6	
	BUSTIE	Open							1324.2	576.8		1146.5	560.8		763.0	375.8	
	Bus B																
	Feeders Incomer from DG#2 Genset Incomer from Aux DG Genset ER Transformer #1B Accommodation Substation FZ 1&2 Interconnect with Bus D – Main Switchboard 2 Earthing Transformer 2 Spare Feeder Bow Thruster	167.6	1425.0	1600.0	96.0	0.87	1484.4	1.0	419.1	292.0	1.0	391.1	282.5	1.0	295.3	228.1	Link from SF-10001 – Bus B Link from ST-1102
	Starters A/C Compressor #2	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130.2	80.7	0.7	130.2	80.7	0.3	55.8	34.6	
Total load HV Switchboard #1									2186	940		1856	921		1057	496	

Tag No.	Load Description	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Util.			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	
ST-1001 6600V Main Switchboard 1 Location - HV Rm. 1																	
	Feeders Incomer from DG#1 Genset ER Transformer #1 A Accommodation Substation FZ 3 Interconnect with Bus C – Main Switchboard 2 Earthing Transformer 1 Spare Feeder PEM #1	510.9	4500.0	5000.0	96.2	0.89	4677.8		28 185	15 86							Link from SF-10001 – Bus A Link from ST-1101
	Starters A/C Compressor #1	23.8	173.0	215.0	93.0	0.85	186.0	0.3	56	35							
	BUS A	Open							268.7	136.1							
	BUS B								629.2	353.2							
	Feeders Incomer from DG#2 Genset Incomer from Aux DG Genset ER Transformer #1B Accommodation Substation FZ 1&2 Interconnect with Bus D – Main Switchboard 2 Earthing Transformer 2 Spare Feeder Bow Thruster	167.6	1425.0	1600.0	96.0	0.87	1484.4		283.1 290.2	217.3 101.3							Link from SF-10001 – Bus B Link from ST-1102
	Starters A/C Compressor #2	23.8	173.0	215.0	93.0	0.85	186.0	0.3	55.8	34.6							
Total load HV Switchboard #1									898	489							

Tag No.	Load Description	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	
	Feeders Incomer from DG#3 Genset ER Transformer #2 C Accommodation Substation FZ 4/5 Interconnect with Bus A – Main Switchboard 1 Earthing Transformer 3 Spare Feeder Stern Thruster	105.2	890.0	1000.0	95.6	0.87	931.0		142 249	86 174		37.6 131.4	17 105		101.9 299.2	63 203	Link from SF-10002 Bus C Link from ST-1103
	Starters A/C Compressor #3	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130	81	0.7	130.2	81	0.7	130.2	81	
	BUS TIE Bus C Open Bus D								521.7	341.0		299.2	203.3		1276.0	768.5	
	Feeders Incomer from DG #4 Genset ER Transformer #2 D Galley Substation Interconnect with Bus B – Main Switchboard 1 Earthing Transformer 4 Spare Feeder PEM #2	510.9	4500.0	5000.0	96.2	0.89	4677.8	0.9	4350.3	2228.7				0.3	1403.3	718.9	Link from SF-10002 Bus D Link from SF-11104
	Starters A/C Compressor #4	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130.2	80.7	0.7	130.2	80.7	0.7	130.2	80.7	
Total load HV Switchboard #2									5696	3095		1069	691		3506	2015	

Tag No.	Load Description	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
Feeders																	
	Incomer from DG#3 Genset							1.0	40	20	1.0	40.3	21	1.0	39.7	20	Link from SF-10002 Bus C Link from SF-11103
	ER Transformer #2 C Accommodation Substation FZ 4/5 Interconnect with Bus A – Main Switchboard 1 Earthing Transformer 3 Spare Feeder Stern Thruster	105.2	890.0	1000.0	95.6	0.87	931.0	1.0	185	109	1.0	28.1	16	1.0	3.5	2	
Starters																	
	A/C Compressor #3	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130	81	0.7	56.5	35	0.3	10.5	7	
BUS TIE																	
	Bus C	Open							354.7	210.1		125.0	71.9		53.7	29.0	
	Bus D	Open							928.2	582.3		782.7	493.9		266.7	158.0	
Feeders																	
	Incomer from DG #4 Genset								55.1	25.9		55.1	25.9		56.1	26.7	Link from SF-10002 Bus D Link from ST-1104
	ER Transformer #2 D Galley Substation Interconnect with Bus B – Main Switchboard 1 Earthing Transformer 4 Spare Feeder PEM #2	510.9	4500.0	5000.0	96.2	0.89	4677.8	742.9	475.7		597.3	387.3		154.7	96.8		
Starters																	
	A/C Compressor #4	23.8	173.0	215.0	93.0	0.85	186.0	0.7	130.2	80.7	0.7	130.2	80.7	0.3	55.8	34.6	
Total load HV Switchboard #2									1283	792		908	566		320	187	

Tag No.	Load Description	FLC Amps	Abs'd Power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)							
	Feeders Incomer from DG#3 Genset ER Transformer #2 C Accommodation Substation FZ 4/5 Interconnect with Bus A – Main Switchboard 1 Earthing Transformer 3 Spare Feeder Stern Thruster	105.2	890.0	1000.0	95.6	0.87	931.0		27 80	14 48										Link from SF-10002 Bus C Link from SF-11103
	Starters A/C Compressor #3	23.8	173.0	215.0	93.0	0.85	186.0	0.3	56	35										
	BUS TIE Bus C Open Bus D								163.4	96.4										
	Feeders Incomer from DG #4 Genset ER Transformer #2 D Galley Substation Interconnect with Bus B – Main Switchboard 1 Earthing Transformer 4 Spare Feeder PEM #2	510.9	4500.0	5000.0	96.2	0.89	4677.8		46.4 59.9	26.8 53.2										Link from SF-10002 Bus D Link from ST-1104
	Starters A/C Compressor #4	23.8	173.0	215.0	93.0	0.85	186.0	0.3	55.8	34.6										
Total load HV Switchboard #2									326	211										

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	DG#1 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0											
	ER 1 Lighting Transformer 1	11.0	4.0	5.8	90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9		Dummy bulk load
	HV Switchboard Rm 1 Air conditioning Heater	10.3	8.0	8.0	100.0	1.00	8.0	0.1	0.8		0.1	0.8		0.1	0.8			
	Hotel UPS Bypass Supply	27.3	15.0	17.8	93.0	0.90	16.1											
	Bridge UPS 1 Bypass Supply	61.7	30.0	35.8	93.0	0.80	32.3											
	Distilled Water Generator	6.4	5.0	5.0	100.0	1.00	5.0	1.0	5.0		1.0	5.0		1.0	5.0			
	Starters																	
	PEM #1 LO Pump 2	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.2	0.7	0.5		
	PEM #1 LO Pump 4	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.2	0.7	0.5		
	PEM #1 Fan 2	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.9	6.1	0.5	9.9	6.1	0.2	4.0	2.5		
	PEM #1 Fan 4	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.9	6.1	0.5	9.9	6.1	0.2	4.0	2.5		
	PEM #1 Transformer Fan 2	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.5	1.2	0.8	0.2	0.5	0.3		
	PEM #1 Transformer Fan 4	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.5	1.2	0.8	0.2	0.5	0.3		
	PEM #1 Converter Fan 2	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.2	3.2	0.5	5.2	3.2	0.2	2.1	1.3		
	PEM #1 Converter Fan 4	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.2	3.2	0.5	5.2	3.2	0.2	2.1	1.3		
	Bow Thruster HPU Pump 1	83.3	45.0	52.0	94.2	0.85	47.8							0.5	23.9	14.8		From Brunvoll
	SW Cooling Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.6	15.6	8.9	0.6	15.6	8.9	0.3	7.8	4.4		
	FW Cooling Pump 1	28.8	13.6	17.3	89.5	0.86	15.2	0.6	9.1	5.4	0.6	9.1	5.4	0.3	4.6	2.7		
	FW Cooling Pump 2	28.8	13.6	17.3	89.5	0.86	15.2	0.6	9.1	5.4	0.6	9.1	5.4	0.3	4.6	2.7		
	FO Supply Pump 1	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.7	0.6	0.5	0.7	0.6	0.5	0.7	0.6		
	FO Circulation Pump 1	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.9	1.9	0.5	2.9	1.9	0.5	2.9	1.9		
	FO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.8	4.2	0.5	6.8	4.2	0.5	6.8	4.2		
	FO Purifiers Supply Pump 1	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	FO Purifiers Supply Pump 2	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	LO Priming Pump DG 1	2.8	1.0	1.3	76.5	0.79	1.3											
	LO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6	0.3	4.1	2.5	0.3	4.1	2.5	0.3	4.1	2.5		
	LO Purifier 1 Supply Pump	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	Jacket Preheat Water Pump 1	9.0	3.9	4.6	83.2	0.79	4.7											
	Starting Air Compressor 1	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.1	0.7	0.1	1.1	0.7	0.1	1.1	0.7		
	Oily Bilge Pump 1	4.9	2.2	2.5	81.6	0.81	2.7	0.1	0.3	0.2	0.1	0.3	0.2	0.1	0.3	0.2		
	Oily Water Separator 1	11.2	5.5	6.3	85.6	0.84	6.4	0.1	0.6	0.4	0.1	0.6	0.4	0.1	0.6	0.4		
	Ballast/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.2	5.2	3.0	0.2	5.2	3.0	0.2	5.2	3.0		
	Fire Pump 1	162.7	75.0	105.0	95.2	0.87	78.8											
	ER 1 Ventilation Fan 1	55.8	25.0	34.5	92.2	0.86	27.1	1.0	27.1	16.1	1.0	27.1	16.1	1.0	27.1	16.1		
	PEM Rm 1 Ventilation Fan 1	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5		
	ECR 1 Ventilation Fan 1	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.3	0.5	0.5	0.3	0.5	0.5	0.3	0.5		
	Distilled Water Hydrophore Pump 1	3.6	1.5	1.8	79.8	0.78	1.9	0.2	0.4	0.3	0.2	0.4	0.3	0.2	0.4	0.3		
	Bus A								136.26	82.01		136.26	82.01		121.57	73.14		
	BUSTIE	Open																
	Bus B								578.79	393.27		536.96	367.87		571.94	390.32		

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	DG#2 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0											
	ER 1 Lighting Transformer 2	15.2	4.0	8.0	90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9		Dummy bulk load
	ECR 1 Air conditioning heater	10.3	8.0	8.0	100.0	1.00	8.0	0.3	2.4		0.3	2.4		0.3	2.4			
	Emergency Switchboard Normal Supply 1								377.5	272.5		377.5	272.5		388.6	280.2		Link from SE-15000
	Control Air Dryer 1	1.3	1.0	1.0	100.0	1.00	1.0	1.0	1.0		1.0	1.0		1.0	1.0			
	MGPS 1	8.2	4.0	4.6	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9		
	Starters																	
	PEM #1 LO Pump 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.2	0.7	0.5	0.2	0.7	0.5		
	PEM #1 LO Pump 3	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.2	0.7	0.5	0.2	0.7	0.5		
	PEM #1 Fan 1	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.9	6.1	0.2	4.0	2.5	0.2	4.0	2.5		
	PEM #1 Fan 3	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.9	6.1	0.2	4.0	2.5	0.2	4.0	2.5		
	PEM #1 Transformer Fan 1	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.2	0.5	0.3	0.2	0.5	0.3		
	PEM #1 Transformer Fan 3	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.2	0.5	0.3	0.2	0.5	0.3		
	PEM #1 Converter Fan 1	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.2	3.2	0.2	2.1	1.3	0.2	2.1	1.3		
	PEM #1 Converter Fan 3	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.2	3.2	0.2	2.1	1.3	0.2	2.1	1.3		
	Bow Thruster HPU Pump 2	83.3	45.0	52.0	94.2	0.85	47.8							0.5	23.9	14.8		From Brunvoll
	SW Cooling Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.6	15.6	8.9	0.3	7.8	4.4	0.3	7.8	4.4		
	SW Cooling Pump 3	40.9	23.8	25.3	91.3	0.87	26.1	0.6	15.6	8.9	0.3	7.8	4.4	0.3	7.8	4.4		
	FW Cooling Pump 3	28.8	13.6	17.3	89.5	0.86	15.2	0.6	9.1	5.4	0.3	4.6	2.7	0.3	4.6	2.7		
	SW Stern tube Pump 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3		
	FO Supply Pump 2	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.7	0.6	0.5	0.7	0.6	0.5	0.7	0.6		
	FO Circulation Pump 2	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.9	1.9	0.5	2.9	1.9	0.5	2.9	1.9		
	FO Purifier 2	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.8	4.2	0.5	6.8	4.2	0.5	6.8	4.2		
	FO Purifiers Supply Pump 3	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	FO Transfer Pump 1 (FWD)	9.0	3.6	4.6	83.2	0.79	4.3	1.0	4.3	3.4	1.0	4.3	3.4	1.0	4.3	3.4		
	LO Priming Pump DG 2	2.8	1.0	1.3	76.5	0.79	1.3											
	Control Air Compressor 1	28.8	15.0	17.3	89.5	0.86	16.8	0.5	8.4	5.0	0.5	8.4	5.0	0.5	8.4	5.0		
	LO Transfer Pump 1	3.6	1.3	1.8	79.8	0.78	1.6											
	Jacket Preheat Water Pump 2	9.0	3.9	4.6	83.2	0.79	4.7											
	Starting Air Compressor 2	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.1	0.7	0.1	1.1	0.7	0.1	1.1	0.7		
	Sludge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.1	0.3	0.3	0.1	0.3	0.3	0.1	0.3	0.3		
	Service Air Compressor 1	55.8	30.0	34.5	92.2	0.86	32.5	0.3	9.8	5.8	0.3	9.8	5.8	0.3	9.8	5.8		
	Steering Gear 1	162.7	86.0	105.0	95.2	0.87	90.3	0.5	45.2	25.6	0.5	45.2	25.6	0.5	45.2	25.6		
	ER 1 Ventilation Fan 2	55.8	25.0	34.5	92.2	0.86	27.1	1.0	27.1	16.1	1.0	27.1	16.1	1.0	27.1	16.1		
	PEM Rm 1 Ventilation Fan 2	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5		
	ER 1 Crane	9.0	4.2	4.6	83.2	0.79	5.0											
	Distilled Water Hydrophore Pump 2	3.6	1.5	1.8	79.8	0.78	1.9	0.2	0.4	0.3	0.2	0.4	0.3	0.2	0.4	0.3		
	Total								715	475		673	450		694	463		

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	DG#1 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0	0.5	12.5		0.2	5.0		0.2	5.0			
	ER 1 Lighting Transformer 1	11.0	4.0	5.8	90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9		
	HV Switchboard Rm 1 Air conditioning Heater	10.3	8.0	8.0	100.0	1.00	8.0	0.1	0.8		0.1	0.8		0.1	0.8			
	Hotel UPS Bypass Supply	27.3	15.0	17.8	93.0	0.90	16.1											
	Bridge UPS 1 Bypass Supply	61.7	30.0	35.8	93.0	0.80	32.3											
	Distilled Water Generator	6.4	5.0	5.0	100.0	1.00	5.0	1.0	5.0		1.0	5.0		1.0	5.0			
	Starters																	
	PEM #1 LO Pump 2	6.7	3.0	3.5	83.6	0.80	3.6											
	PEM #1 LO Pump 4	6.7	3.0	3.5	83.6	0.80	3.6											
	PEM #1 Fan 2	35.3	18.0	21.3	91.0	0.85	19.8											
	PEM #1 Fan 4	35.3	18.0	21.3	91.0	0.85	19.8											
	PEM #1 Transformer Fan 2	4.9	1.9	2.5	81.6	0.81	2.3											
	PEM #1 Transformer Fan 4	4.9	1.9	2.5	81.6	0.81	2.3											
	PEM #1 Converter Fan 2	14.9	9.0	8.6	86.9	0.85	10.4											
	PEM #1 Converter Fan 4	14.9	9.0	8.6	86.9	0.85	10.4											
	Bow Thruster HPU Pump 1	83.3	45.0	52.0	94.2	0.85	47.8											
	SW Cooling Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4		
	FW Cooling Pump 1	28.8	13.6	17.3	89.5	0.86	15.2	0.3	4.6	2.7	0.3	4.6	2.7	0.3	4.6	2.7		
	FW Cooling Pump 2	28.8	13.6	17.3	89.5	0.86	15.2	0.3	4.6	2.7	0.3	4.6	2.7	0.3	4.6	2.7		
	FO Supply Pump 1	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.7	0.6	0.5	0.7	0.6	0.5	0.7	0.6		
	FO Circulation Pump 1	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.9	1.9	0.5	2.9	1.9	0.5	2.9	1.9		
	FO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.8	4.2	0.5	6.8	4.2	0.5	6.8	4.2		
	FO Purifiers Supply Pump 1	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	FO Purifiers Supply Pump 2	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.5	1.6	1.2		
	LO Priming Pump DG 1	2.8	1.0	1.3	76.5	0.79	1.3											
	LO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6	0.2	2.7	1.7	0.2	2.7	1.7	0.2	2.7	1.7		
	LO Purifier 1 Supply Pump	6.7	2.6	3.5	83.6	0.80	3.1	0.2	0.6	0.5	0.2	0.6	0.5	0.2	0.6	0.5		
	Jacket Preheat Water Pump 1	9.0	3.9	4.6	83.2	0.79	4.7	0.5	2.3	1.8	0.3	1.4	1.1	0.3	1.4	1.1		
	Starting Air Compressor 1	21.7	10.0	12.7	88.5	0.85	11.3	0.3	3.4	2.1	0.3	3.4	2.1	0.3	3.4	2.1		
	Oily Bilge Pump 1	4.9	2.2	2.5	81.6	0.81	2.7	0.1	0.3	0.2	0.1	0.3	0.2	0.1	0.3	0.2		
	Oily Water Separator 1	11.2	5.5	6.3	85.6	0.84	6.4	0.1	0.6	0.4	0.1	0.6	0.4	0.1	0.6	0.4		
	Ballast/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.1	2.6	1.5	0.1	2.6	1.5	0.1	2.6	1.5		
	Fire Pump 1	162.7	75.0	105.0	95.2	0.87	78.8											
	ER 1 Ventilation Fan 1	55.8	25.0	34.5	92.2	0.86	27.1	0.5	13.6	8.0	0.5	13.6	8.0	0.5	13.6	8.0		
	PEM Rm 1 Ventilation Fan 1	3.6	1.5	1.8	79.8	0.78	1.9	0.5	0.9	0.8	0.5	0.9	0.8	0.5	0.9	0.8		
	ECR 1 Ventilation Fan 1	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.3	0.5	0.5	0.3	0.5	0.5	0.3	0.5		
	Distilled Water Hydrophore Pump 1	3.6	1.5	1.8	79.8	0.78	1.9	0.2	0.4	0.3	0.2	0.4	0.3	0.2	0.4	0.3		
	Bus A								80.97	40.52		72.54	39.79		72.54	39.79		
	BUSTIE		Open															
	Bus B								419.06	292.03		391.13	282.51		295.28	228.07		

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders																
	DG#2 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0	0.5	12.5				0.2	5.0			
	ER 1 Lighting Transformer 2	15.2	4.0	8.0	90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9	
	ECR 1 Air conditioning heater	10.3	8.0	8.0	100.0	1.00	8.0	0.3	2.4		0.3	2.4		0.3	2.4		
	Emergency Switchboard Normal Supply 1								309.7	232.8		309.7	232.8		218.7	184.8	
	Control Air Dryer 1	1.3	1.0	1.0	100.0	1.00	1.0	0.5	0.5		0.5	0.5		0.5	0.5		
	MGPS 1	8.2	4.0	4.6	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9	
	Starters																
	PEM #1 LO Pump 1	6.7	3.0	3.5	83.6	0.80	3.6										
	PEM #1 LO Pump 3	6.7	3.0	3.5	83.6	0.80	3.6										
	PEM #1 Fan 1	35.3	18.0	21.3	91.0	0.85	19.8										
	PEM #1 Fan 3	35.3	18.0	21.3	91.0	0.85	19.8										
	PEM #1 Transformer Fan 1	4.9	1.9	2.5	81.6	0.81	2.3										
	PEM #1 Transformer Fan 3	4.9	1.9	2.5	81.6	0.81	2.3										
	PEM #1 Converter Fan 1	14.9	9.0	8.6	86.9	0.85	10.4										
	PEM #1 Converter Fan 3	14.9	9.0	8.6	86.9	0.85	10.4										
	Bow Thruster HPU Pump 2	83.3	45.0	52.0	94.2	0.85	47.8										
	SW Cooling Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4	
	SW Cooling Pump 3	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4	
	FW Cooling Pump 3	28.8	13.6	17.3	89.5	0.86	15.2	0.3	4.6	2.7	0.3	4.6	2.7	0.3	4.6	2.7	
	SW Stern tube Pump 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3	
	FO Supply Pump 2	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.7	0.6	0.5	0.7	0.6	0.2	0.3	0.2	
	FO Circulation Pump 2	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.9	1.9	0.5	2.9	1.9	0.2	1.2	0.8	
	FO Purifier 2	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.8	4.2	0.5	6.8	4.2	0.2	2.7	1.7	
	FO Purifiers Supply Pump 3	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.6	1.2	0.5	1.6	1.2	0.2	0.6	0.5	
	FO Transfer Pump 1 (FWD)	9.0	3.6	4.6	83.2	0.79	4.3	0.5	2.2	1.7	0.5	2.2	1.7	0.2	0.9	0.7	
	LO Priming Pump DG 2	2.8	1.0	1.3	76.5	0.79	1.3										
	Control Air Compressor 1	28.8	15.0	17.3	89.5	0.86	16.8	0.2	3.4	2.0	0.2	3.4	2.0	0.2	3.4	2.0	
	LO Transfer Pump 1	3.6	1.3	1.8	79.8	0.78	1.6	0.1	0.2	0.1	0.1	0.2	0.1				
	Jacket Preheat Water Pump 2	9.0	3.9	4.6	83.2	0.79	4.7	0.5	2.3	1.8	0.3	1.4	1.1	0.3	1.4	1.1	
	Starting Air Compressor 2	21.7	10.0	12.7	88.5	0.85	11.3	0.3	3.4	2.1	0.3	3.4	2.1	0.1	1.1	0.7	
	Sludge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.1	0.3	0.3	0.1	0.3	0.3	0.1	0.3	0.3	
	Service Air Compressor 1	55.8	30.0	34.5	92.2	0.86	32.5	0.3	9.8	5.8	0.3	9.8	5.8	0.3	9.8	5.8	
	Steering Gear 1	162.7	86.0	105.0	95.2	0.87	90.3										
	ER 1 Ventilation Fan 2	55.8	25.0	34.5	92.2	0.86	27.1	1.0	27.1	16.1	0.5	13.6	8.0	0.5	13.6	8.0	
	PEM Rm 1 Ventilation Fan 2	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	0.5	0.9	0.8	0.5	0.9	0.8	
	ER 1 Crane	9.0	4.2	4.6	83.2	0.79	5.0							0.2	1.0	0.8	
	Distilled Water Hydrophore Pump 2	3.6	1.5	1.8	79.8	0.78	1.9	0.2	0.4	0.3	0.2	0.4	0.3	0.2	0.4	0.3	
	Total								500	333		464	322	17	368	268	

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders													
	DG#1 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0							
	ER 1 Lighting Transformer 1	11.0	4.0	5.8	90.0	0.75	4.4	1.0	4.4	3.9				
	HV Switchboard Rm 1 Air conditioning Heater	10.3	8.0	8.0	100.0	1.00	8.0	0.5	4.0					
	Hotel UPS Bypass Supply	27.3	15.0	17.8	93.0	0.90	16.1							
	Bridge UPS 1 Bypass Supply	61.7	30.0	35.8	93.0	0.80	32.3							
	Distilled Water Generator	6.4	5.0	5.0	100.0	1.00	5.0							
	Starters													
	PEM #1 LO Pump 2	6.7	3.0	3.5	83.6	0.80	3.6							
	PEM #1 LO Pump 4	6.7	3.0	3.5	83.6	0.80	3.6							
	PEM #1 Fan 2	35.3	18.0	21.3	91.0	0.85	19.8							
	PEM #1 Fan 4	35.3	18.0	21.3	91.0	0.85	19.8							
	PEM #1 Transformer Fan 2	4.9	1.9	2.5	81.6	0.81	2.3							
	PEM #1 Transformer Fan 4	4.9	1.9	2.5	81.6	0.81	2.3							
	PEM #1 Converter Fan 2	14.9	9.0	8.6	86.9	0.85	10.4							
	PEM #1 Converter Fan 4	14.9	9.0	8.6	86.9	0.85	10.4							
	Bow Thruster HPU Pump 1	83.3	45.0	52.0	94.2	0.85	47.8							
	SW Cooling Pump 1	40.9	23.8	25.3	91.3	0.87	26.1							
	FW Cooling Pump 1	28.8	13.6	17.3	89.5	0.86	15.2							
	FW Cooling Pump 2	28.8	13.6	17.3	89.5	0.86	15.2							
	FO Supply Pump 1	2.8	1.1	1.3	76.5	0.79	1.4							
	FO Circulation Pump 1	11.2	5.0	6.3	85.6	0.84	5.8							
	FO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6							
	FO Purifiers Supply Pump 1	6.7	2.6	3.5	83.6	0.80	3.1							
	FO Purifiers Supply Pump 2	6.7	2.6	3.5	83.6	0.80	3.1							
	LO Priming Pump DG 1	2.8	1.0	1.3	76.5	0.79	1.3							
	LO Purifier 1	21.7	12.0	12.7	88.5	0.85	13.6							
	LO Purifier 1 Supply Pump	6.7	2.6	3.5	83.6	0.80	3.1							
	Jacket Preheat Water Pump 1	9.0	3.9	4.6	83.2	0.79	4.7							
	Starting Air Compressor 1	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.1	0.7				
	Oily Bilge Pump 1	4.9	2.2	2.5	81.6	0.81	2.7							
	Oily Water Separator 1	11.2	5.5	6.3	85.6	0.84	6.4							
	Ballast/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.1	2.6	1.5				
	Fire Pump 1	162.7	75.0	105.0	95.2	0.87	78.8							
	ER 1 Ventilation Fan 1	55.8	25.0	34.5	92.2	0.86	27.1	0.5	13.6	8.0				
	PEM Rm 1 Ventilation Fan 1	3.6	1.5	1.8	79.8	0.78	1.9	0.5	0.9	0.8				
	ECR 1 Ventilation Fan 1	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.3	0.5				
	Distilled Water Hydrophore Pump 1	3.6	1.5	1.8	79.8	0.78	1.9							
	Bus A								26.98	15.42				
	BUSTIE		Open											
	Bus B								277.58	217.28				

Tag No.	SF-10001 450V ER Switchboard 1 Location - ER #1	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders														
	DG#2 Preheating Unit	32.1	25.0	25.0	100.0	1.00	25.0								
	ER 1 Lighting Transformer 2	15.2	4.0	8.0	90.0	0.75	4.4								
	ECR 1 Air conditioning heater	10.3	8.0	8.0	100.0	1.00	8.0	0.5	4.0						
	Emergency Switchboard Normal Supply 1								238.8	195.9					
	Control Air Dryer 1	1.3	1.0	1.0	100.0	1.00	1.0	0.2	0.2						
	MGPS 1	8.2	4.0	4.6	85.0	0.85	4.7	1.0	4.7	2.9					
	Starters														
	PEM #1 LO Pump 1	6.7	3.0	3.5	83.6	0.80	3.6								
	PEM #1 LO Pump 3	6.7	3.0	3.5	83.6	0.80	3.6								
	PEM #1 Fan 1	35.3	18.0	21.3	91.0	0.85	19.8								
	PEM #1 Fan 3	35.3	18.0	21.3	91.0	0.85	19.8								
	PEM #1 Transformer Fan 1	4.9	1.9	2.5	81.6	0.81	2.3								
	PEM #1 Transformer Fan 3	4.9	1.9	2.5	81.6	0.81	2.3								
	PEM #1 Converter Fan 1	14.9	9.0	8.6	86.9	0.85	10.4								
	PEM #1 Converter Fan 3	14.9	9.0	8.6	86.9	0.85	10.4								
	Bow Thruster HPU Pump 2	83.3	45.0	52.0	94.2	0.85	47.8								
	SW Cooling Pump 2	40.9	23.8	25.3	91.3	0.87	26.1								
	SW Cooling Pump 3	40.9	23.8	25.3	91.3	0.87	26.1								
	FW Cooling Pump 3	28.8	13.6	17.3	89.5	0.86	15.2								
	SW Stern tube Pump 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3					
	FO Supply Pump 2	2.8	1.1	1.3	76.5	0.79	1.4								
	FO Circulation Pump 2	11.2	5.0	6.3	85.6	0.84	5.8								
	FO Purifier 2	21.7	12.0	12.7	88.5	0.85	13.6								
	FO Purifiers Supply Pump 3	6.7	2.6	3.5	83.6	0.80	3.1								
	FO Transfer Pump 1 (FWD)	9.0	3.6	4.6	83.2	0.79	4.3								
	LO Priming Pump DG 2	2.8	1.0	1.3	76.5	0.79	1.3								
	Control Air Compressor 1	28.8	15.0	17.3	89.5	0.86	16.8	0.1	1.7	1.0					
	LO Transfer Pump 1	3.6	1.3	1.8	79.8	0.78	1.6								
	Jacket Preheat Water Pump 2	9.0	3.9	4.6	83.2	0.79	4.7								
	Starting Air Compressor 2	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.1	0.7					
	Sludge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5								
	Service Air Compressor 1	55.8	30.0	34.5	92.2	0.86	32.5	0.3	9.8	5.8					
	Steering Gear 1	162.7	86.0	105.0	95.2	0.87	90.3								
	ER 1 Ventilation Fan 2	55.8	25.0	34.5	92.2	0.86	27.1	0.5	13.6	8.0					
	PEM Rm 1 Ventilation Fan 2	3.6	1.5	1.8	79.8	0.78	1.9	0.5	0.9	0.8					
	ER 1 Crane	9.0	4.2	4.6	83.2	0.79	5.0	0.2	1.0	0.8					
	Distilled Water Hydrophore Pump 2	3.6	1.5	1.8	79.8	0.78	1.9								
	Total								305	233					

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	DG#3 Preheating Unit	32.1	25.00	25.00	100	1	25.00				0.3	7.50						
	ER 2 Lighting Transformer 1	15.2	4	8	90	0.75	4.44	1.0	4.44	3.92	1.0	4.44	3.92	1.0	4.44	3.92		
	HV Switchboard Rm 2 Air conditioning Heater	10.3	8	8	100	1	8.00	0.1	0.80		0.5	4.00		0.1	0.80			
	Bridge UPS 2 Bypass supply	54.9	30	36	93	0.9	32.26											
	MGPS 2	8.2	4	5	85	0.85	4.71	1.0	4.71	2.92	1.0	4.71	2.92	1.0	4.71	2.92		
	Starters																	
	PEM #2 LO Pump 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.79	1.35				0.2	0.72	0.54		
	PEM #2 LO Pump 3	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.79	1.35				0.2	0.72	0.54		
	PEM #2 Fan 1	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.89	6.13				0.2	3.96	2.45		
	PEM #2 Fan 3	35.3	18.0	21.3	91.0	0.85	19.8	0.5	9.89	6.13				0.2	3.96	2.45		
	PEM #2 Transformer Fan 1	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.16	0.84				0.2	0.47	0.34		
	PEM #2 Transformer Fan 3	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.16	0.84				0.2	0.47	0.34		
	PEM #2 Converter Fan 1	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.18	3.21				0.2	2.07	1.28		
	PEM #2 Converter Fan 3	14.9	9.0	8.6	86.9	0.85	10.4	0.5	5.18	3.21				0.2	2.07	1.28		
	Stern Thruster HPU 1	9.0	4.0	4.6	83.2	0.79	4.8							0.5	2.40	1.87		
	SW Cooling Pump 4	40.9	23.8	25.3	91.3	0.87	26.1	0.6	15.64	8.86				0.3	7.82	4.43		
	SW Cooling Pump 5	40.9	23.8	25.3	91.3	0.87	26.1	0.6	15.64	8.86				0.3	7.82	4.43		
	FW Cooling Pump 4	28.8	13.6	17.3	89.5	0.86	15.2	0.6	9.12	5.41				0.3	4.56	2.70		
	SW Stern tube Pump 2	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.79	1.35	0.5	1.79	1.35	0.5	1.79	1.35		
	FO Supply Pump 3	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.72	0.56				0.5	0.72	0.56		
	FO Circulation Pump 3	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.92	1.89				0.5	2.92	1.89		
	FO Purifier 3	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.78	4.20				0.5	6.78	4.20		
	FO Purifiers Supply Pump 4	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.56	1.17				0.5	1.56	1.17		
	FO Transfer Pump 2 (AFT)	9.0	3.6	4.6	83.2	0.79	4.3	0.5	2.16	1.68				0.5	2.16	1.68		
	LO Priming Pump DG 3	2.8	1.0	1.3	76.5	0.79	1.3											
	LO Purifier 2	21.7	12.0	12.7	88.5	0.85	13.6	0.3	4.07	2.52				0.3	4.07	2.52		
	LO Purifier 2 Supply Pump	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.56	1.17				0.5	1.56	1.17		
	Jacket Preheat Water Pump 3	9.0	3.9	4.6	83.2	0.79	4.7				0.3	1.41	1.09					
	Starting Air Compressor 3	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.13	0.70	0.1	1.13	0.70	0.1	1.13	0.70		
	Oily Bilge Pump 2	4.9	2.2	2.5	81.6	0.81	2.7	0.1	0.27	0.20	0.1	0.27	0.20	0.1	0.27	0.20		
	Oily Water Separator 2	11.2	5.5	6.3	85.6	0.84	6.4	0.1	0.64	0.42				0.1	0.64	0.42		
	Ballast/Bilge Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.2	5.21	2.95				0.2	5.21	2.95		
	Fire Pump 2	162.7	75.0	105.0	95.2	0.87	78.8											
	ER 2 Ventilation Fan 1	40.9	20.0	25.3	91.3	0.87	21.9	1.0	21.91	12.41	0.5	10.95	6.21	1.0	21.91	12.41		
	PEM Rm 2 Ventilation Fan 1	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.88	1.51	0.2	0.38	0.30	1.0	1.88	1.51		
	ECR 2 Ventilation Fan 1	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.30	0.52	0.5	0.30	0.52	0.5	0.30	0.52		
	Bus C								139.30	86.27		36.88	17.20		99.87	62.73		
	BUSTIE	Open																
	Bus D								94.61	57.42		41.78	19.29		97.02	59.29		

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	DG#4 Preheating Unit	32.1	25	25	100	1.00	25.00				0.3	7.50						
	ER 2 Lighting Transformer 2	15.2	4	8	90	0.75	4.44	1.0	4.44	3.92	1.0	4.44	3.92	1.0	4.44	3.92		
	ECR 2 Air conditioning heater	10.3	8	8	100	1	8.00	0.1	0.80		0.2	1.60		0.1	0.80			
	Workshop Air conditioning heater	10.3	8	8	100	1	8.00	0.1	0.80		0.2	1.60		0.1	0.80			
	Lathe	9.0	4	4.6	83.2	0.79	4.45											
	Drill machine	2.0	1	0.9	79.2	0.72	1.01											
	Grinder	6.7	3	3.5	83.6	0.8	3.35											
	Exhaust valve grinding machine	4.9	2	2.5	81.6	0.81	2.45											
	Emergency Switchboard Normal Supply 2																	To be accounted for tx sizing
	Control Air Dryer 2	1.3	1	1	100	1	1.00	1.0	1.00		1.0	1.00		1.0	1.00			
	Starters																	
	PEM #2 LO Pump 2	6.7	3.0	3.5	83.6	0.80	3.6	0.2	0.72	0.54				0.2	0.72	0.54		
	PEM #2 LO Pump 4	6.7	3.0	3.5	83.6	0.80	3.6	0.2	0.72	0.54				0.2	0.72	0.54		
	PEM #2 Fan 2	35.3	18.0	21.3	91.0	0.85	19.8	0.2	3.96	2.45				0.2	3.96	2.45		
	PEM #2 Fan 4	35.3	18.0	21.3	91.0	0.85	19.8	0.2	3.96	2.45				0.2	3.96	2.45		
	PEM #2 Transformer Fan 2	4.9	1.9	2.5	81.6	0.81	2.3	0.2	0.47	0.34				0.2	0.47	0.34		
	PEM #2 Transformer Fan 4	4.9	1.9	2.5	81.6	0.81	2.3	0.2	0.47	0.34				0.2	0.47	0.34		
	PEM #2 Converter Fan 2	14.9	9.0	8.6	86.9	0.85	10.4	0.2	2.07	1.28				0.2	2.07	1.28		
	PEM #2 Converter Fan 4	14.9	9.0	8.6	86.9	0.85	10.4	0.2	2.07	1.28				0.2	2.07	1.28		
	Stern Thruster HPU 2	9.0	4.0	4.6	83.2	0.79	4.8							0.5	2.40	1.87		
	SW Cooling Pump 6	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.82	4.43				0.3	7.82	4.43		
	FW Cooling Pump 5	28.8	13.6	17.3	89.5	0.86	15.2	0.3	4.56	2.70				0.3	4.56	2.70		
	FW Cooling Pump 6	28.8	13.6	17.3	89.5	0.86	15.2	0.3	4.56	2.70				0.3	4.56	2.70		
	FO Supply Pump 4	2.8	1.1	1.3	76.5	0.79	1.4	0.5	0.72	0.56				0.5	0.72	0.56		
	FO Circulation Pump 4	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.92	1.89				0.5	2.92	1.89		
	FO Purifier 4	21.7	12.0	12.7	88.5	0.85	13.6	0.5	6.78	4.20				0.5	6.78	4.20		
	FO Purifiers Supply Pump 5	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.56	1.17				0.5	1.56	1.17		
	FO Purifiers Supply Pump 6	6.7	2.6	3.5	83.6	0.80	3.1	0.5	1.56	1.17				0.5	1.56	1.17		
	LO Priming Pump DG 4	2.8	1.0	1.3	76.5	0.79	1.3											
	LO Transfer Pump 2	3.6	1.3	1.8	79.8	0.78	1.6											
	Jacket Preheat Water Pump 4	9.0	3.9	4.6	83.2	0.79	4.7				0.3	1.41	1.09					
	Starting Air Compressor 4	21.7	10.0	12.7	88.5	0.85	11.3	0.1	1.13	0.70	0.1	1.13	0.70	0.1	1.13	0.70		
	Sludge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5	0.1	0.35	0.26				0.1	0.35	0.26		
	Control Air Compressor 2	28.8	15.0	17.3	89.5	0.86	16.8	0.5	8.38	4.97	0.5	8.38	4.97	0.5	8.38	4.97		
	Turning Gear	14.9	6.6	8.6	86.9	0.85	7.6											
	ER 2 Ventilation Fan 2	40.9	20.0	25.3	91.3	0.87	21.9	1.0	21.91	12.41	0.5	10.95	6.21	1.0	21.91	12.41		
	PEM Rm 2 Ventilation Fan 2	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.88	1.51	0.2	0.38	0.30	1.0	1.88	1.51		
	ER Workshop Air conditioning	21.7	10.0	12.7	88.5	0.85	11.3	0.8	9.04	5.60	0.3	3.39	2.10	0.8	9.04	5.60		
	ER 2 Crane	9.0	4.2	4.6	83.2	0.79	5.0											
	TOTAL								234	144		79	36		197	122		

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders																
	DG#3 Preheating Unit	32.08	25	25	100	1	25.00	0.2	5.00		0.2	5.00		0.2	5.00		
	ER 2 Lighting Transformer 1	15.21	4	8	90	0.75	4.44	1.0	4.44	3.92	1.0	4.44	3.92	1.0	4.44	3.92	
	HV Switchboard Rm 2 Air conditioning Heater	10.26	8	8	100	1	8.00	0.5	4.00		0.5	4.00		0.5	4.00		
	Bridge UPS 2 Bypass supply	54.88	30	36	93	0.9	32.26										
	MGPS 2	8.17	4	5	85	0.85	4.71	1.0	4.71	2.92	1.0	4.71	2.92	1.0	4.71	2.92	
	Starters																
	PEM #2 LO Pump 1	6.71	3	4	83.6	0.8	3.59										
	PEM #2 LO Pump 3	6.71	3	4	83.6	0.8	3.59										
	PEM #2 Fan 1	35.33	18	21	91	0.85	19.78										
	PEM #2 Fan 3	35.33	18	21	91	0.85	19.78										
	PEM #2 Transformer Fan 1	4.85	2	3	81.6	0.81	2.33										
	PEM #2 Transformer Fan 3	4.85	2	3	81.6	0.81	2.33										
	PEM #2 Converter Fan 1	14.94	9	9	86.9	0.85	10.36										
	PEM #2 Converter Fan 3	14.94	9	9	86.9	0.85	10.36										
	Stern Thruster HPU 1	8.98	4	5	83.2	0.79	4.81										
	SW Cooling Pump 4	40.87	24	25	91.3	0.87	26.07										
	SW Cooling Pump 5	40.87	24	25	91.3	0.87	26.07										
	FW Cooling Pump 4	28.84	14	17	89.5	0.86	15.20										
	SW Stern tube Pump 2	6.71	3	4	83.6	0.8	3.59	0.5	1.79	1.35	0.5	1.79	1.35	0.5	1.79	1.35	
	FO Supply Pump 3	2.76	1	1	76.5	0.79	1.44										
	FO Circulation Pump 3	11.24	5	6	85.6	0.84	5.84										
	FO Purifier 3	21.66	12	13	88.5	0.85	13.56										
	FO Purifiers Supply Pump 4	6.71	3	4	83.6	0.8	3.11										
	FO Transfer Pump 2 (AFT)	8.98	4	5	83.2	0.79	4.33										
	LO Priming Pump DG 3	2.76	1	1	76.5	0.79	1.31										
	LO Purifier 2	21.66	12	13	88.5	0.85	13.56										
	LO Purifier 2 Supply Pump	6.71	3	4	83.6	0.8	3.11										
	Jacket Preheat Water Pump 3	8.98	4	5	83.2	0.79	4.69	0.1	0.47	0.36	0.2	0.94	0.73	0.2	0.94	0.73	
	Starting Air Compressor 3	21.66	10	13	88.5	0.85	11.30	0.1	1.13	0.70	0.1	1.13	0.70	0.1	1.13	0.70	
	Oily Bilge Pump 2	4.85	2	3	81.6	0.81	2.70	0.1	0.27	0.20	0.1	0.27	0.20	0.1	0.27	0.20	
	Oily Water Separator 2	11.24	6	6	85.6	0.84	6.43	0.1	0.64	0.42	0.1	0.64	0.42				
	Ballast/Bilge Pump 2	40.87	24	25	91.3	0.87	26.07	0.2	5.21	2.95	0.2	5.21	2.95	0.2	5.21	2.95	
	Fire Pump 2	162.65	75	105	95.2	0.87	78.78										
	ER 2 Ventilation Fan 1	40.87	20	25	91.3	0.87	21.91	0.5	10.95	6.21	0.5	10.95	6.21	0.5	10.95	6.21	
	PEM Rm 2 Ventilation Fan 1	3.61	2	2	79.8	0.78	1.88	0.5	0.94	0.75	0.5	0.94	0.75	0.5	0.94	0.75	
	ECR 2 Ventilation Fan 1	1.75	0	0	66	0.5	0.61	0.5	0.30	0.52	0.5	0.30	0.52	0.5	0.30	0.52	
	Bus C								39.86	20.30		40.33	20.66		39.69	20.25	
	BUSTIE	Open															
	Bus D								54.03	25.90		54.03	25.90		55.04	26.69	

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders																
	DG#4 Preheating Unit	32.08	25	25	100	1	25.00	0.2	5.00		0.2	5.00		0.2	5.00		
	ER 2 Lighting Transformer 2	15.21	4	8	90	0.75	4.44	1.0	4.44	3.92	1.0	4.44	3.92	1.0	4.44	3.92	
	ECR 2 Air conditioning heater	10.26	8	8	100	1	8.00	0.5	4.00		0.5	4.00		0.5	4.00		
	Workshop Air conditioning heater	10.26	8	8	100	1	8.00	0.5	4.00		0.5	4.00		0.5	4.00		
	Lathe	8.98	4	5	83.2	0.79	4.45										
	Drill machine	2.02	1	1	79.2	0.72	1.01										
	Grinder	6.71	3	4	83.6	0.8	3.35										
	Exhaust valve grinding machine	4.85	2	3	81.6	0.81	2.45										
	Emergency Switchboard Normal Supply 2																
	Control Air Dryer 2	1.28	1	1	100	1	1.00	0.5	0.50		0.5	0.50		0.5	0.50		
	Starters																
	PEM #2 LO Pump 2	6.71	3	4	83.6	0.8	3.59										
	PEM #2 LO Pump 4	6.71	3	4	83.6	0.8	3.59										
	PEM #2 Fan 2	35.33	18	21	91	0.85	19.78										
	PEM #2 Fan 4	35.33	18	21	91	0.85	19.78										
	PEM #2 Transformer Fan 2	4.85	2	3	81.6	0.81	2.33										
	PEM #2 Transformer Fan 4	4.85	2	3	81.6	0.81	2.33										
	PEM #2 Converter Fan 2	14.94	9	9	86.9	0.85	10.36										
	PEM #2 Converter Fan 4	14.94	9	9	86.9	0.85	10.36										
	Stern Thruster HPU 2	8.98	4	5	83.2	0.79	4.81										
	SW Cooling Pump 6	40.87	24	25	91.3	0.87	26.07										
	FW Cooling Pump 5	28.84	14	17	89.5	0.86	15.20										
	FW Cooling Pump 6	28.84	14	17	89.5	0.86	15.20										
	FO Supply Pump 4	2.76	1	1	76.5	0.79	1.44										
	FO Circulation Pump 4	11.24	5	6	85.6	0.84	5.84										
	FO Purifier 4	21.66	12	13	88.5	0.85	13.56										
	FO Purifiers Supply Pump 5	6.71	3	4	83.6	0.8	3.11										
	FO Purifiers Supply Pump 6	6.71	3	4	83.6	0.8	3.11										
	LO Priming Pump DG 4	2.76	1	1	76.5	0.79	1.31										
	LO Transfer Pump 2	3.61	1	2	79.8	0.78	1.63										
	Jacket Preheat Water Pump 4	8.98	4	5	83.2	0.79	4.69	0.1	0.47	0.36	0.1	0.47	0.36	0.1	0.47	0.36	
	Starting Air Compressor 4	21.66	10	13	88.5	0.85	11.30	0.1	1.13	0.70	0.1	1.13	0.70	0.1	1.13	0.70	
	Sludge Pump 2	6.71	3	4	83.6	0.8	3.47	0.1	0.35	0.26	0.1	0.35	0.26	0.1	0.35	0.26	
	Control Air Compressor 2	28.84	15	17	89.5	0.86	16.76	0.2	3.35	1.99	0.2	3.35	1.99	0.2	3.35	1.99	
	Turning Gear	14.94	7	9	86.9	0.85	7.59	1.0	7.59	4.71	1.0	7.59	4.71	1.0	7.59	4.71	
	ER 2 Ventilation Fan 2	40.87	20	25	91.3	0.87	21.91	0.5	10.95	6.21	0.5	10.95	6.21	0.5	10.95	6.21	
	PEM Rm 2 Ventilation Fan 2	3.61	2	2	79.8	0.78	1.88	0.5	0.94	0.75	0.5	0.94	0.75	0.5	0.94	0.75	
	ER Workshop Air conditioning	21.66	10	13	88.5	0.85	11.30	1.0	11.30	7.00	1.0	11.30	7.00	1.0	11.30	7.00	
	ER 2 Crane	8.98	4	5	83.2	0.79	5.05							0.2	1.01	0.78	
	TOTAL								94	46		94	47	12	95	47	

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
Load Description															
Feeders															
DG#3 Preheating Unit		32.08	25.00	25.00	100.00	1	25.00								
ER 2 Lighting Transformer 1		15.21	4.00	8.00	90.00	0.75	4.44								
HV Switchboard Rm 2 Air conditioning Heater		10.26	8.00	8.00	100.00	1	8.00	0.5	4.00						
Bridge UPS 2 Bypass supply		54.88	30.00	35.80	93.00	0.9	32.26								
MGPS 2		8.17	4.00	4.60	85.00	0.85	4.71	1.0	4.71	2.92					
Starters															
PEM #2 LO Pump 1		6.71	3	4	83.6	0.80	3.59								
PEM #2 LO Pump 3		6.71	3	4	83.6	0.80	3.59								
PEM #2 Fan 1		35.33	18	21	91.0	0.85	19.78								
PEM #2 Fan 3		35.33	18	21	91.0	0.85	19.78								
PEM #2 Transformer Fan 1		4.85	2	3	81.6	0.81	2.33								
PEM #2 Transformer Fan 3		4.85	2	3	81.6	0.81	2.33								
PEM #2 Converter Fan 1		14.94	9	9	86.9	0.85	10.36								
PEM #2 Converter Fan 3		14.94	9	9	86.9	0.85	10.36								
Stern Thruster HPU 1		8.98	4	5	83.2	0.79	4.81								
SW Cooling Pump 4		40.87	24	25	91.3	0.87	26.07								
SW Cooling Pump 5		40.87	24	25	91.3	0.87	26.07								
FW Cooling Pump 4		28.84	14	17	89.5	0.86	15.20								
SW Stern tube Pump 2		6.71	3	4	83.6	0.80	3.59	0.5	1.79	1.35					
FO Supply Pump 3		2.76	1	1	76.5	0.79	1.44								
FO Circulation Pump 3		11.24	5	6	85.6	0.84	5.84								
FO Purifier 3		21.66	12	13	88.5	0.85	13.56								
FO Purifiers Supply Pump 4		6.71	3	4	83.6	0.80	3.11								
FO Transfer Pump 2 (AFT)		8.98	4	5	83.2	0.79	4.33								
LO Priming Pump DG 3		2.76	1	1	76.5	0.79	1.31								
LO Purifier 2		21.66	12	13	88.5	0.85	13.56								
LO Purifier 2 Supply Pump		6.71	3	4	83.6	0.80	3.11								
Jacket Preheat Water Pump 3		8.98	4	5	83.2	0.79	4.69								
Starting Air Compressor 3		21.66	10	13	88.5	0.85	11.30	0.1	1.13	0.70					
Oily Bilge Pump 2		4.85	2	3	81.6	0.81	2.70	0.1	0.27	0.20					
Oily Water Separator 2		11.24	6	6	85.6	0.84	6.43								
Ballast/Bilge Pump 2		40.87	24	25	91.3	0.87	26.07	0.1	2.61	1.48					
Fire Pump 2		162.65	75	105	95.2	0.87	78.78								
ER 2 Ventilation Fan 1		40.87	20	25	91.3	0.87	21.91	0.5	10.95	6.21					
PEM Rm 2 Ventilation Fan 1		3.61	2	2	79.8	0.78	1.88	0.5	0.94	0.75					
ECR 2 Ventilation Fan 1		1.75	0	0	66.0	0.50	0.61	0.5	0.30	0.52					
Bus C									26.70	14.12					
BUSTIE		Open													
Bus D									45.50	26.81					

Tag No.	SF-10002 450V ER Switchboard 2 Location - ER #2	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders													
	DG#4 Preheating Unit	32.08	25	25	100	1.00	25.00							
	ER 2 Lighting Transformer 2	15.21	4	8	90	0.75	4.44	1.0	4.44	3.92				
	ECR 2 Air conditioning heater	10.26	8	8	100	1	8.00	0.5	4.00					
	Workshop Air conditioning heater	10.26	8	8	100	1	8.00							
	Lathe	8.98	4	5	83.2	0.79	4.45	0.2	0.89	0.69				
	Drill machine	2.02	1	1	79.2	0.72	1.01	0.2	0.20	0.19				
	Grinder	6.71	3	4	83.6	0.8	3.35	0.2	0.67	0.50				
	Exhaust valve grinding machine	4.85	2	3	81.6	0.81	2.45	0.2	0.49	0.35				
	Emergency Switchboard Normal Supply 2													
	Control Air Dryer 2	1.28	1	1	100	1	1.00	0.2	0.20					
	Starters													
	PEM #2 LO Pump 2	6.71	3	4	83.6	0.80	3.59							
	PEM #2 LO Pump 4	6.71	3	4	83.6	0.80	3.59							
	PEM #2 Fan 2	35.33	18	21	91.0	0.85	19.78							
	PEM #2 Fan 4	35.33	18	21	91.0	0.85	19.78							
	PEM #2 Transformer Fan 2	4.85	2	3	81.6	0.81	2.33							
	PEM #2 Transformer Fan 4	4.85	2	3	81.6	0.81	2.33							
	PEM #2 Converter Fan 2	14.94	9	9	86.9	0.85	10.36							
	PEM #2 Converter Fan 4	14.94	9	9	86.9	0.85	10.36							
	Stern Thruster HPU 2	8.98	4	5	83.2	0.79	4.81							
	SW Cooling Pump 6	40.87	24	25	91.3	0.87	26.07							
	FW Cooling Pump 5	28.84	14	17	89.5	0.86	15.20							
	FW Cooling Pump 6	28.84	14	17	89.5	0.86	15.20							
	FO Supply Pump 4	2.76	1	1	76.5	0.79	1.44							
	FO Circulation Pump 4	11.24	5	6	85.6	0.84	5.84							
	FO Purifier 4	21.66	12	13	88.5	0.85	13.56							
	FO Purifiers Supply Pump 5	6.71	3	4	83.6	0.80	3.11							
	FO Purifiers Supply Pump 6	6.71	3	4	83.6	0.80	3.11							
	LO Priming Pump DG 4	2.76	1	1	76.5	0.79	1.31							
	LO Transfer Pump 2	3.61	1	2	79.8	0.78	1.63							
	Jacket Preheat Water Pump 4	8.98	4	5	83.2	0.79	4.69							
	Starting Air Compressor 4	21.66	10	13	88.5	0.85	11.30	0.1	1.13	0.70				
	Sludge Pump 2	6.71	3	4	83.6	0.80	3.47							
	Control Air Compressor 2	28.84	15	17	89.5	0.86	16.76	0.1	1.68	0.99				
	Turning Gear	14.94	7	9	86.9	0.85	7.59	1.0	7.59	4.71				
	ER 2 Ventilation Fan 2	40.87	20	25	91.3	0.87	21.91	0.5	10.95	6.21				
	PEM Rm 2 Ventilation Fan 2	3.61	2	2	79.8	0.78	1.88	0.5	0.94	0.75				
	ER Workshop Air conditioning	21.66	10	13	88.5	0.85	11.30	1.0	11.30	7.00				
	ER 2 Crane	8.98	4	5	83.2	0.79	5.05	0.2	1.01	0.78				
	TOTAL								72	41			5	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	ST-1101 6600V Acc. Substation FZ 3 Location - 4th Dk Fr. 90 PS																	
	Feeders																	
	450V Loads from SF-11101	35.2	361.0		98.0	0.93	368.3		361.0	136.8		361.0	136.8		358.1	134.7		
	120V Lighting Loads	11.1	77.0		90.0	0.8	85.6	1.0	85.6	75.5	1.0	85.6	75.5	1.0	85.6	75.5		
	Starters																	
	Total load								513.5	244.0		513.5	244.0		510.2	241.6		

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	ST-1101 6600V Acc. Substation FZ 3 Location - 4th Dk Fr. 90 PS																
	Feeders																
	450V Loads from SF-11101	35.2	361.0		98.0	0.93	368.3		480.38	134.87		355.15	132.79		154.26	42.14	
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	1	85.56	75.45	1.0	85.56	75.45	0.2	17.11	15.09	
	Starters																
	Total load								651	242		507	239		197	66	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Util. & Cons'd			Remarks	
								Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	450V Loads from SF-11101	35.2	361.0		98.0	0.93	368.3		109.86	29.60								
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	0.6	51.33	45.27								
	Starters																	
	Total load								185	86								

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	ST-1102 6600V Acc. Substation FZ 1&2 Location - 4th Dk Fr. 123 PS																	
	Feeders																	
	450V Loads from SF-11102	47.3	506.9		98.0	0.98	517.3		460.9	98.5		460.9	98.5		506.9	124.0		
	120V Lighting Loads	11.1	77.0	8.0	90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	1.0	85.6	75.5		
	Starters																	
	Total Load								628	200		628	200		681	229		

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeders																
	450V Loads from SF-11102	47.3	506.9		98.0	0.98	517.3		588.3	102.0		458.1	96.4		315.4	60.6	
	120V Lighting Loads	11.1	77.0	8.0	90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	0.5	42.8	37.7	
	Starters																
	Total Load								775	204		625	198		412	113	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	ST-1103 6600V Acc. Substation FZ 4&5 Location - 3rd Dk Fr. 50 SB																	
	Feeders																	
	450V Loads from SF-11103	18.5	174.6		98.0	0.86	178.2	1.0	131.3	75.9	1.0	28.7	16.2	1.0	174.6	101.1		
	120V Lighting Loads	11.1	77.0	8.0	90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	1.0	85.6	75.5		
	Starters																	
	Total Load								249	174		131	105		299	203		

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	ST-1103 6600V Acc. Substation FZ 4&5 Location - 3rd Dk Fr. 50 SB																
	Feeders																
	450V Loads from SF-11103	18.5	174.6		98.0	0.86	178.2		188.3	109.1		28.7	16.2		3.6	2.3	
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	0.5	42.8	37.7	
	Starters																
	Total Load								315	212		131	105		53	46	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	ST-1103 6600V Acc. Substation FZ 1&2 Location - 3rd Dk Fr. 50 SB													
	Feeders													
	450V Loads from SF-11103	18.5	174.6		98.0	0.86	178.2		81.9	109.1				
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	0.6	51.3	45.3				
	Starters													
	Total Load								153	178				

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	ST-1104 6600V Galley Substation Location - 4th Dk Fr. 123 SB																	
	Feeders																	
	450V Loads from SF-11104	46.4	433.9		98.0	0.85	442.7		433.9	261.3		433.9	261.3		433.9	261.3		
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	1.0	85.6	75.5		
	Starters																	
	Total Load								597	387		597	387		597	387		

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeder																
	450V Loads from SF-11104	46.4	433.9		98.0	0.85	442.7		560.4	338.2		433.9	261.3		117.4	69.1	
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	1.0	85.6	75.5	1.0	85.6	75.5	0.2	17.1	15.1	
	Starters																
	Total Load								743	476		597	387		155	97	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
	Feeder													
	450V Loads from SF-11104	46.4	433.9		98.0	0.85	442.7		0.8	1.0				
	120V Lighting Loads	11.1	77.0		90.0	0.75	85.6	0.6	51.3	45.3				
	Starters													
	Total Load								60	53				

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
SF-11101																		
450V Acc. Substation FZ 3																		
Location - 4th Dk Fr. 90 PS																		
Feeders																		
	Provision refrigeration plant 2	192.8	100.0	125.0	95.6	0.87	104.6	0.5	52.3	29.6	0.5	52.3	29.6	0.5	52.3	29.6		
	Sewage Treatment plant 2	40.9	20.0	25.3	91.3	0.87	21.9	1.0	21.9	12.4	1.0	21.9	12.4	1.0	21.9	12.4		
	EVAC Collection System 2	21.7	10.0	12.7	88.5	0.85	11.3	1.0	11.3	7.0	1.0	11.3	7.0	1.0	11.3	7.0		
	Gray Water Treatment Plant 2	69.2	35.3	43.0	93.8	0.85	37.6	1.0	37.6	23.3	1.0	37.6	23.3	1.0	37.6	23.3		
	Potable Water Heater 7	51.3	40.0	40.0	100.0	1.00	40.0	0.5	20.0		0.5	20.0		0.5	20.0			
	Potable Water Heater 8	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0		0.5	30.0			
	AHU 1 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0			
	AHU 2 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0			
	AHU 3 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0			
	AHU 4 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0			
	MGPS 4	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9		
Starters																		
	Aux SW Pump 3	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4		
	Aux SW Pump 4	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4		
	Aux SW/Bilge Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4		
	Fresh Water Maker 2 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4	1.0	4.4	3.5	1.0	4.4	3.5	1.0	4.4	3.5		
	Fresh Water Maker 2	69.2	35.0	43.0	93.8	0.85	37.3	1.0	37.3	23.1	1.0	37.3	23.1	1.0	37.3	23.1		
	Hot Water Circulation Pump 5	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9		
	Hot Water Circulation Pump 6	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9		
	Hot Water Circulation Pump 7	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9		
	Hot Water Circulation Pump 8	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9		
	Hydrophore Pump 5	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1	0.5	1.5	1.1		
	Hydrophore Pump 6	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1	0.5	1.5	1.1		
	Hydrophore Pump 7	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1	0.5	1.5	1.1		
	Hydrophore Pump 8	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1	0.5	1.5	1.1		
	Aux Rm 3 Ventilation Fan 1	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0	0.5	1.4	1.0	0.5	1.4	1.0		
	Aux Rm 3 Ventilation Fan 2	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0	0.5	1.4	1.0	0.5	1.4	1.0		
	Aux Rm 4 Ventilation Fan 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3		
	Aux Rm 4 Ventilation Fan 2	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3		
	Shore Connection Reel Motor PS	11.2	5.0	6.3	85.6	0.84	5.8	0.5	2.9	1.9	0.5	2.9	1.9	0.5	2.9	1.9		
	Black Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5					
	Black Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5					
	Grey Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5					
	Grey Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5					
	Sewage Sludge Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5											
	Sewage Sludge Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5											
	HVAC Circulating Water Pump 3	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4		
	HVAC Circulating Water Pump 4	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4		
TOTAL						0.93			354	137		354	137		351	135		

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
SF-11101																	
450V Acc. Substation FZ 3																	
Location - 4th Dk Fr. 90 PS																	
Feeders																	
	Provision refrigeration plant 2	192.8	100.0	125.0	95.6	0.87	104.6	0.5	52.3	29.6	0.5	52.3	29.6	0.5	52.3	29.6	
	Sewage Treatment plant 2	40.9	20.0	25.3	91.3	0.87	21.9	1.0	21.9	12.4	1.0	21.9	12.4				
	EVAC Collection System 2	21.7	10.0	12.7	88.5	0.85	11.3	1.0	11.3	7.0	1.0	11.3	7.0				
	Gray Water Treatment Plant 2	69.2	35.3	43.0	93.8	0.85	37.6	1.0	37.6	23.3	1.0	37.6	23.3				
	Potable Water Heater 7	51.3	40.0	40.0	100.0	1.00	40.0	0.5	20.0		0.5	20.0					
	Potable Water Heater 8	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0					
	AHU 1 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 2 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 3 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 4 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	MGPS 4	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9	
Starters																	
	Aux SW Pump 3	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4				
	Aux SW Pump 4	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4				
	Aux SW/Bilge Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4				
	Fresh Water Maker 2 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4	1.0	4.4	3.5	1.0	4.4	3.5				
	Fresh Water Maker 2	69.2	35.0	43.0	93.8	0.85	37.3	1.0	37.3	23.1	1.0	37.3	23.1				
	Hot Water Circulation Pump 5	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9				
	Hot Water Circulation Pump 6	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9				
	Hot Water Circulation Pump 7	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9				
	Hot Water Circulation Pump 8	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9				
	Hydrophore Pump 5	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1				
	Hydrophore Pump 6	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1				
	Hydrophore Pump 7	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1				
	Hydrophore Pump 8	6.7	2.5	3.5	83.6	0.80	3.0	0.5	1.5	1.1	0.5	1.5	1.1				
	Aux Rm 3 Ventilation Fan 1	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0	0.5	1.4	1.0	0.5	1.4	1.0	
	Aux Rm 3 Ventilation Fan 2	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0	0.5	1.4	1.0	0.5	1.4	1.0	
	Aux Rm 4 Ventilation Fan 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3	
	Aux Rm 4 Ventilation Fan 2	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3	0.5	1.8	1.3	0.5	1.8	1.3	
	Shore Connection Reel Motor PS	11.2	5.0	6.3	85.6	0.84	5.8										
	Black Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Black Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Grey Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Grey Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Sewage Sludge Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5										
	Sewage Sludge Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5										
	HVAC Circulating Water Pump 3	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	HVAC Circulating Water Pump 4	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	Total								471	135		348	133		151	42	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Util. & Simult. power (kW)	Cons'd power (kVAr)	Remarks
								Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)			
SF-11101																
450V Acc. Substation FZ 3																
Location - 4th Dk Fr. 90 PS																
Feeders																
	Provision refrigeration plant 2	192.8	100.0	125.0	95.6	0.87	104.6									
	Sewage Treatment plant 2	40.9	20.0	25.3	91.3	0.87	21.9									
	EVAC Collection System 2	21.7	10.0	12.7	88.5	0.85	11.3	0.5	5.6	3.5						
	Gray Water Treatment Plant 2	69.2	35.3	43.0	93.8	0.85	37.6									
	Potable Water Heater 7	51.3	40.0	40.0	100.0	1.00	40.0	0.2	8.0							
	Potable Water Heater 8	77.0	60.0	60.0	100.0	1.00	60.0	0.2	12.0							
	AHU 1 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0							
	AHU 2 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0							
	AHU 3 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0							
	AHU 4 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0							
	MGPS 4	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9						
Starters																
	Aux SW Pump 3	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4						
	Aux SW Pump 4	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4						
	Aux SW/Bilge Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4						
	Fresh Water Maker 2 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4									
	Fresh Water Maker 2	69.2	35.0	43.0	93.8	0.85	37.3									
	Hot Water Circulation Pump 5	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4						
	Hot Water Circulation Pump 6	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4						
	Hot Water Circulation Pump 7	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4						
	Hot Water Circulation Pump 8	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4						
	Hydrophore Pump 5	6.7	2.5	3.5	83.6	0.80	3.0	0.2	0.6	0.4						
	Hydrophore Pump 6	6.7	2.5	3.5	83.6	0.80	3.0	0.2	0.6	0.4						
	Hydrophore Pump 7	6.7	2.5	3.5	83.6	0.80	3.0	0.2	0.6	0.4						
	Hydrophore Pump 8	6.7	2.5	3.5	83.6	0.80	3.0	0.2	0.6	0.4						
	Aux Rm 3 Ventilation Fan 1	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0						
	Aux Rm 3 Ventilation Fan 2	4.9	2.3	2.5	81.6	0.81	2.8	0.5	1.4	1.0						
	Aux Rm 4 Ventilation Fan 1	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3						
	Aux Rm 4 Ventilation Fan 2	6.7	3.0	3.5	83.6	0.80	3.6	0.5	1.8	1.3						
	Shore Connection Reel Motor PS	11.2	5.0	6.3	85.6	0.84	5.8									
	Black Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5									
	Black Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5									
	Grey Water Discharge Pump 3	6.7	2.9	3.5	83.6	0.80	3.5									
	Grey Water Discharge Pump 4	6.7	2.9	3.5	83.6	0.80	3.5									
	Sewage Sludge Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5									
	Sewage Sludge Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5									
	HVAC Circulating Water Pump 3	14.9	6.8	8.6	86.9	0.85	7.8	0.2	1.6	1.0						
	HVAC Circulating Water Pump 4	14.9	6.8	8.6	86.9	0.85	7.8	0.2	1.6	1.0						
	Total								108	30						

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
SF-11102																	
450V Acc. Substation FZ 1&2																	
Location - 4th Dk Fr. 123 PS																	
Feeders																	
	EVAC Collection System 1	21.7	10.0	12.7	88.5	0.85	11.3	1.0	11.3	7.0	1.0	11.3	7.0	1.0	11.3	7.0	
	Gray Water Treatment Plant 1	69.2	35.3	43.0	93.8	0.85	37.6	1.0	37.6	23.3	1.0	37.6	23.3	1.0	37.6	23.3	
	Potable Water Heater 1	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0		0.5	30.0		
	Potable Water Heater 2	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0		0.5	30.0		
	Potable Water Heater 3	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	Potable Water Heater 4	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	AHU 5 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0		
	AHU 6 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0		
	AHU 7 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0		
	AHU 8 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.2	20.0		0.2	20.0		0.2	20.0		
	Potable Water Heater 5	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	Potable Water Heater 6	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	MGPS 3	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9	
Starters																	
	Aux SW Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4	
	Aux SW Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4	
	Aux SW/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.3	7.8	4.4	
	Bow Thruster Rm FW Cooling Pump 1	1.7	0.5	0.7	78.5	0.62	0.6							0.5	0.3	0.4	
	Bow Thruster Rm FW Cooling Pump 2	1.7	0.5	0.7	78.5	0.62	0.6							0.5	0.3	0.4	
	Fresh Water Maker 1 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4	1.0	4.4	3.5	1.0	4.4	3.5	1.0	4.4	3.5	
	Fresh Water Maker 1	69.2	35.0	43.0	93.8	0.85	37.3	1.0	37.3	23.1	1.0	37.3	23.1	1.0	37.3	23.1	
	Hot Water Circulation Pump 1	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9	
	Hot Water Circulation Pump 2	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9	
	Hot Water Circulation Pump 3	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9	
	Hot Water Circulation Pump 4	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.5	1.2	0.9	
	Hydrophore Pump 1	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.5	3.2	2.1	
	Hydrophore Pump 2	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.5	3.2	2.1	
	Hydrophore Pump 3	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.5	3.2	2.1	
	Hydrophore Pump 4	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.5	3.2	2.1	
	Aux Rm 1 Ventilation Fan 1	4.9	2.1	2.5	81.6	0.81	2.6	0.5	1.3	0.9	0.5	1.3	0.9	0.5	1.3	0.9	
	Aux Rm 1 Ventilation Fan 2	4.9	2.1	2.5	81.6	0.81	2.6	0.5	1.3	0.9	0.5	1.3	0.9	0.5	1.3	0.9	
	Aux Rm 2 Ventilation Fan 1	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.5	1.2	0.8	0.5	1.2	0.8	
	Aux Rm 2 Ventilation Fan 2	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8	0.5	1.2	0.8	0.5	1.2	0.8	
	Bosun Store Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5	
	Bow Thruster Rm Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5	
	Windlass 1	162.7	75.0	105.0	95.2	0.87	78.8							0.2	15.8	8.9	
	Windlass 2	162.7	75.0	105.0	95.2	0.87	78.8							0.2	15.8	8.9	
	Fwd Mooring Winch	162.7	75.0	105.0	95.2	0.87	78.8							0.2	15.8	8.9	
	Black Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5				
	Black Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5				
	Grey Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5				
	Grey Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5	0.2	0.7	0.5				
	HVAC Circulating Water Pump 1	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	HVAC Circulating Water Pump 2	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	TOTAL						0.98		452	98		452	98		497	124	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
SF-11102																	
450V Acc. Substation FZ 1&2																	
Location - 4th Dk Fr. 123 PS																	
Feeders																	
	EVAC Collection System 1	21.7	10.0	12.7	88.5	0.85	11.3	1.0	11.3	7.0	1.0	11.3	7.0	1.0	11.3	7.0	
	Gray Water Treatment Plant 1	69.2	35.3	43.0	93.8	0.85	37.6	1.0	37.6	23.3	1.0	37.6	23.3	1.0	37.6	23.3	
	Potable Water Heater 1	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0		0.2	12.0		
	Potable Water Heater 2	77.0	60.0	60.0	100.0	1.00	60.0	0.5	30.0		0.5	30.0		0.2	12.0		
	Potable Water Heater 3	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.2	15.6		
	Potable Water Heater 4	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.2	15.6		
	AHU 5 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 6 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 7 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	AHU 8 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.5	50.0		0.2	20.0		0.2	20.0		
	Potable Water Heater 5	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	Potable Water Heater 6	100.1	78.0	78.0	100.0	1.00	78.0	0.5	39.0		0.5	39.0		0.5	39.0		
	MGPS 3	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9	1.0	4.7	2.9	1.0	4.7	2.9	
Starters																	
	Aux SW Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.1	2.6	1.5	
	Aux SW Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.1	2.6	1.5	
	Aux SW/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4	0.3	7.8	4.4	0.2	5.2	3.0	
	Bow Thruster Rm FW Cooling Pump 1	1.7	0.5	0.7	78.5	0.62	0.6										
	Bow Thruster Rm FW Cooling Pump 2	1.7	0.5	0.7	78.5	0.62	0.6										
	Fresh Water Maker 1 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4	1.0	4.4	3.5	1.0	4.4	3.5	0.2	0.9	0.7	
	Fresh Water Maker 1	69.2	35.0	43.0	93.8	0.85	37.3	1.0	37.3	23.1	1.0	37.3	23.1	0.2	7.5	4.6	
	Hot Water Circulation Pump 1	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.2	0.5	0.4	
	Hot Water Circulation Pump 2	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.2	0.5	0.4	
	Hot Water Circulation Pump 3	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.2	0.5	0.4	
	Hot Water Circulation Pump 4	4.9	2.0	2.5	81.6	0.81	2.5	0.5	1.2	0.9	0.5	1.2	0.9	0.2	0.5	0.4	
	Hydrophore Pump 1	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.2	1.3	0.8	
	Hydrophore Pump 2	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.2	1.3	0.8	
	Hydrophore Pump 3	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.2	1.3	0.8	
	Hydrophore Pump 4	11.2	5.5	6.3	85.6	0.84	6.4	0.5	3.2	2.1	0.5	3.2	2.1	0.2	1.3	0.8	
	Aux Rm 1 Ventilation Fan 1	4.9	2.1	2.5	81.6	0.81	2.6	1.0	2.6	1.9	0.5	1.3	0.9	0.5	1.3	0.9	
	Aux Rm 1 Ventilation Fan 2	4.9	2.1	2.5	81.6	0.81	2.6	1.0	2.6	1.9	0.5	1.3	0.9	0.5	1.3	0.9	
	Aux Rm 2 Ventilation Fan 1	4.9	1.9	2.5	81.6	0.81	2.3	1.0	2.3	1.7	0.5	1.2	0.8	0.5	1.2	0.8	
	Aux Rm 2 Ventilation Fan 2	4.9	1.9	2.5	81.6	0.81	2.3	1.0	2.3	1.7	0.5	1.2	0.8	0.5	1.2	0.8	
	Bosun Store Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5	
	Bow Thruster Rm Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5	1.0	1.9	1.5	1.0	1.9	1.5	
	Windlass 1	162.7	75.0	105.0	95.2	0.87	78.8										
	Windlass 2	162.7	75.0	105.0	95.2	0.87	78.8										
	Fwd Mooring Winch	162.7	75.0	105.0	95.2	0.87	78.8										
	Black Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Black Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Grey Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	Grey Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5	0.2	0.7	0.5							
	HVAC Circulating Water Pump 1	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	HVAC Circulating Water Pump 2	14.9	6.8	8.6	86.9	0.85	7.8	0.5	3.9	2.4	0.5	3.9	2.4	0.5	3.9	2.4	
	Total								577	102		449	96		309	61	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Remarks
								Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util. & Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)				
SF-11102																	
450V Acc. Substation FZ 1&2																	
Location - 4th Dk Fr. 123 PS																	
Feeders																	
	EVAC Collection System 1	21.7	10.0	12.7	88.5	0.85	11.3										
	Gray Water Treatment Plant 1	69.2	35.3	43.0	93.8	0.85	37.6										
	Potable Water Heater 1	77.0	60.0	60.0	100.0	1.00	60.0	0.2	12.0								
	Potable Water Heater 2	77.0	60.0	60.0	100.0	1.00	60.0	0.2	12.0								
	Potable Water Heater 3	100.1	78.0	78.0	100.0	1.00	78.0	0.2	15.6								
	Potable Water Heater 4	100.1	78.0	78.0	100.0	1.00	78.0	0.2	15.6								
	AHU 5 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0								
	AHU 6 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0								
	AHU 7 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0								
	AHU 8 Heaters	128.3	100.0	100.0	100.0	1.00	100.0	0.1	10.0								
	Potable Water Heater 5	100.1	78.0	78.0	100.0	1.00	78.0	0.2	15.6								
	Potable Water Heater 6	100.1	78.0	78.0	100.0	1.00	78.0	0.2	15.6								
	MGPS 3	8.9	4.0	5.0	85.0	0.85	4.7	1.0	4.7	2.9							
Starters																	
	Aux SW Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4							
	Aux SW Pump 2	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4							
	Aux SW/Bilge Pump 1	40.9	23.8	25.3	91.3	0.87	26.1	0.3	7.8	4.4							
	Bow Thruster Rm FW Cooling Pump 1	1.7	0.5	0.7	78.5	0.62	0.6										
	Bow Thruster Rm FW Cooling Pump 2	1.7	0.5	0.7	78.5	0.62	0.6										
	Fresh Water Maker 1 SW Supply Pump	9.0	3.7	4.6	83.2	0.79	4.4										
	Fresh Water Maker 1	69.2	35.0	43.0	93.8	0.85	37.3										
	Hot Water Circulation Pump 1	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4							
	Hot Water Circulation Pump 2	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4							
	Hot Water Circulation Pump 3	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4							
	Hot Water Circulation Pump 4	4.9	2.0	2.5	81.6	0.81	2.5	0.2	0.5	0.4							
	Hydrophore Pump 1	11.2	5.5	6.3	85.6	0.84	6.4	0.2	1.3	0.8							
	Hydrophore Pump 2	11.2	5.5	6.3	85.6	0.84	6.4	0.2	1.3	0.8							
	Hydrophore Pump 3	11.2	5.5	6.3	85.6	0.84	6.4	0.2	1.3	0.8							
	Hydrophore Pump 4	11.2	5.5	6.3	85.6	0.84	6.4	0.2	1.3	0.8							
	Aux Rm 1 Ventilation Fan 1	4.9	2.1	2.5	81.6	0.81	2.6	0.5	1.3	0.9							
	Aux Rm 1 Ventilation Fan 2	4.9	2.1	2.5	81.6	0.81	2.6	0.5	1.3	0.9							
	Aux Rm 2 Ventilation Fan 1	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8							
	Aux Rm 2 Ventilation Fan 2	4.9	1.9	2.5	81.6	0.81	2.3	0.5	1.2	0.8							
	Bosun Store Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5							
	Bow Thruster Rm Ventilation Fan	3.6	1.5	1.8	79.8	0.78	1.9	1.0	1.9	1.5							
	Windlass 1	162.7	75.0	105.0	95.2	0.87	78.8	0.1	7.9	4.5							
	Windlass 2	162.7	75.0	105.0	95.2	0.87	78.8	0.1	7.9	4.5							
	Fwd Mooring Winch	162.7	75.0	105.0	95.2	0.87	78.8	0.1	7.9	4.5							
	Black Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5										
	Black Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5										
	Grey Water Discharge Pump 1	6.7	2.9	3.5	83.6	0.80	3.5										
	Grey Water Discharge Pump 2	6.7	2.9	3.5	83.6	0.80	3.5										
	HVAC Circulating Water Pump 1	14.9	6.8	8.6	86.9	0.85	7.8	0.2	1.6	1.0							
	HVAC Circulating Water Pump 2	14.9	6.8	8.6	86.9	0.85	7.8	0.2	1.6	1.0							
	Total								197	43							

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
Feeder																	
	Incinerator	80.8	45.0	50.0	91.3	0.87	49.3	0.5	24.6	14.0	0.5	24.6	14.0	0.5	24.6	14.0	
	Container socket 1	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 2	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 3	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 4	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 5	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 6	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 7	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 8	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3	5.0	3.0	
	Container socket 9	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 10	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 11	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 12	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 13	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 14	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 15	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 16	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 17	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 18	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 19	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
	Container socket 20	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0				0.3			
Starters																	
	Aft Mooring Winch 1	138.3	75.0	88.0	94.9	0.86	79.0							0.3	23.7	14.1	
	Aft Mooring Winch 2	138.3	75.0	88.0	94.9	0.86	79.0							0.3	23.7	14.1	
	Aft Mooring Winch 3	138.3	75.0	88.0	94.9	0.86	79.0							0.3	23.7	14.1	
	Crane	287.5	152.0	185.0	96.0	0.86	158.3							0.2	31.7	18.8	
	Cargo ramp	138.3	80.0	88.0	94.9	0.86	84.3										
	Ventilation Fan 1 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.84	7.0	0.5	3.5	2.3	0.5	3.5	2.3	0.5	3.5	2.3	
	TOTAL					0.86			129	76		28	16		171	101	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
Feeders																	
	Incinerator	80.8	45.0	50.0	91.3	0.87	49.3	0.5	24.6	14.0	0.5	24.6	14.0				
	Container socket 1	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 2	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 3	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 4	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 5	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 6	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 7	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 8	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 9	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 10	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 11	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 12	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 13	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 14	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 15	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 16	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 17	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 18	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 19	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
	Container socket 20	28.8	15.0	17.3	89.5	0.86	16.8	0.3	5.0	3.0							
Starters																	
	Aft Mooring Winch 1	138.3	75.0	88.0	94.9	0.86	79.0										
	Aft Mooring Winch 2	138.3	75.0	88.0	94.9	0.86	79.0										
	Aft Mooring Winch 3	138.3	75.0	88.0	94.9	0.86	79.0										
	Crane	287.5	152.0	185.0	96.0	0.86	158.3	0.3	47.5	28.2							
	Cargo ramp	138.3	80.0	88.0	94.9	0.86	84.3	0.1	8.4	5.0							
	Ventilation Fan 1 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.84	7.0	0.5	3.5	2.3	0.5	3.5	2.3	0.5	3.5	2.3	
	Total								185	109		28	16		4	2	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks				
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVA)		
Feeders																		
	Incinerator	80.8	45.0	50.0	91.3	0.87	49.3											
	Container socket 1	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 2	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 3	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 4	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 5	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 6	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 7	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 8	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 9	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 10	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 11	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 12	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 13	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 14	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 15	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 16	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 17	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 18	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 19	28.8	15.0	17.3	89.5	0.86	16.8											
	Container socket 20	28.8	15.0	17.3	89.5	0.86	16.8											
	Starters																	
	Aft Mooring Winch 1	138.3	75.0	88.0	94.9	0.86	79.0	0.1	7.9	4.7								
	Aft Mooring Winch 2	138.3	75.0	88.0	94.9	0.86	79.0	0.1	7.9	4.7								
	Aft Mooring Winch 3	138.3	75.0	88.0	94.9	0.86	79.0	0.1	7.9	4.7								
	Crane	287.5	152.0	185.0	96.0	0.86	158.3	0.3	47.5	28.2								
	Cargo ramp	138.3	80.0	88.0	94.9	0.86	84.3	0.1	8.4	5.0								
	Ventilation Fan 1 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.84	7.0	0.1	0.7	0.5								
	Total								80	48								

Tag No.	SF-11104 450V Galley Substation Location - 4th Dk Fr. 123 SB	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	Provisions refrigeration plant 1	192.8	100.0	125.0	95.6	0.87	104.6	0.5	52.3	29.6	0.5	52.3	29.6	0.5	52.3	29.6		
	Provisional bulk load galley	561.9	300.0	360.0	96.7	0.85	310.2	0.6	186.1	115.4	0.6	186.1	115.4	0.6	186.1	115.4		
	Provisional bulk load laundry	561.9	300.0	360.0	96.7	0.85	310.2	0.6	186.1	115.4	0.6	186.1	115.4	0.6	186.1	115.4		
	Starters																	
	Galley Supply Fan	1.7	0.6	0.7	78.5	0.62	0.8	1.0	0.8	1.0	1.0	0.8	1.0	1.0	0.8	1.0		
	Shore Connection Reel Motor SB	11.2	5.0	6.3	85.6	0.84	5.8											
	TOTAL					0.85			425	261		425	261		425	261		

Tag No.	SF-11104 450V Galley Substation Location - 4th Dk Fr. 123 SB	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	Provisions refrigeration plant 1	192.8	100.0	125.0	95.6	0.87	104.6	0.5	52.3	29.6	0.5	52.3	29.6	0.5	52.3	29.6		
	Provisional bulk load galley	561.9	300.0	360.0	96.7	0.85	310.2	0.8	248.2	153.8	0.6	186.1	115.4	0.1	31.0	19.2		
	Provisional bulk load laundry	561.9	300.0	360.0	96.7	0.85	310.2	0.8	248.2	153.8	0.6	186.1	115.4	0.1	31.0	19.2		
	Starters																	
	Galley Supply Fan	1.7	0.6	0.7	78.5	0.62	0.8	1.0	0.8	1.0	1.0	0.8	1.0	1.0	0.8	1.0		
	Shore Connection Reel Motor SB	11.2	5.0	6.3	85.6	0.84	5.8											
	Total								549	338		425	261		115	69		

Tag No.	SF-11104 450V Galley Substation Location - 4th Dk Fr. 123 SB	FLC Amps	Abs'd. power (kW)	Motor Rating (kW) Load (kVA)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency						Remarks	
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)		
	Feeders																	
	Provisions refrigeration plant 1	192.8	100.0	125.0	95.6	0.87	104.6											
	Provisional bulk load galley	561.9	300.0	360.0	96.7	0.85	310.2											
	Provisional bulk load laundry	561.9	300.0	360.0	96.7	0.85	310.2											
	Starters																	
	Galley Supply Fan	1.7	0.6	0.7	78.5	0.62	0.8	1.0	0.8	1.0								
	Shore Connection Reel Motor SB	11.2	5.0	6.3	85.6	0.84	5.8											
	Total								1	1								

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Transit 18kts			Transit 12kts			Maneuvering			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
SE-15000																	
450V Emergency Switchboard																	
Location - EDG Room																	
Feeders																	
	Steering Gear 2	162.7	86.0	105.0	95.2	0.87	90.3	0.5	45.2	25.6	0.5	45.2	25.6	0.5	45.2	25.6	
	Emergency Lighting Substation FZ1&2	73.9	35.0		90.0	0.75	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Substation FZ3	73.9	35.0		90.0	0.75	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Substation FZ4&5	73.9	35.0		90.0	0.75	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Galley Substation	73.9	35.0		90.0	0.75	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting ER 1	8.4	4.0		90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9	
	Emergency Lighting ER 2	8.4	4.0		90.0	0.75	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9	
	Bridge UPS 1	49.4	30.0		93.0	0.90	32.3	1.0	32.3	15.6	1.0	32.3	15.6	1.0	32.3	15.6	
	Bridge UPS 2	49.4	30.0		93.0	0.90	32.3	1.0	32.3	15.6	1.0	32.3	15.6	1.0	32.3	15.6	
	PA/GA UPS 1	24.7	15.0		93.0	0.90	16.1	0.1	1.6	0.8	0.1	1.6	0.8	0.1	1.6	0.8	
	PA/GA UPS 2	24.7	15.0		93.0	0.90	16.1	0.1	1.6	0.8	0.1	1.6	0.8	0.1	1.6	0.8	
	Battery Charger LB #1	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #2	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #3	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #4	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #5	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #6	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #7	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #8	3.2	2.0		95.0	0.88	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger Rescue Boat	4.8	3.0		95.0	0.88	3.2	0.2	0.6	0.3	0.2	0.6	0.3	0.2	0.6	0.3	
Starters																	
	Fire Water Pump 3	162.7	75.0	105.0	95.2	0.87	78.8										
	Davit Winch LB#1	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#2	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#3	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#4	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#5	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#6	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#7	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch LB#8	9.0	3.7	4.6	83.2	0.79	4.4										
	Davit Winch Rescue Boat	35.3	18.0	21.3	91.0	0.85	19.8										
	ECR 1 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.3	0.5	0.5	0.3	0.5	1.0	0.6	1.0	
	ECR 2 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.50	0.6	0.5	0.3	0.5	0.5	0.3	0.5	1.0	0.6	1.0	
	ECR 1 Air conditioning package	21.7	10.0	12.7	88.5	0.85	11.3	0.8	9.0	5.6	0.8	9.0	5.6	1.0	11.3	7.0	
	ECR 2 Air conditioning package	21.7	10.0	12.7	88.5	0.85	11.3	0.8	9.0	5.6	0.8	9.0	5.6	1.0	11.3	7.0	
	HV Switchboard 1 Air conditioning package	21.7	10.0	12.7	88.5	0.85	11.3	0.8	9.0	5.6	0.8	9.0	5.6	1.0	11.3	7.0	
	HV Switchboard 2 Air conditioning package	21.7	10.0	12.7	88.5	0.85	11.3	0.8	9.0	5.6	0.8	9.0	5.6	1.0	11.3	7.0	
	Galley Exhaust Fan	6.7	3.0	3.5	83.6	0.80	3.6	1.0	3.6	2.7	1.0	3.6	2.7	1.0	3.6	2.7	
	Steering Gear Rm Fan	2.8	1.0	1.3	76.5	0.79	1.3	1.0	1.3	1.0	1.0	1.3	1.0	1.0	1.3	1.0	
	Paint Lkr Exhaust Fan	2.0	0.8	0.9	79.2	0.72	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
	Inergen Rm Exhaust Fan 2	1.7	0.6	0.7	78.5	0.62	0.8	1.0	0.8	1.0	1.0	0.8	1.0	1.0	0.8	1.0	
	Ventilation Fan 2 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.84	7.0	0.5	3.5	2.3	0.5	3.5	2.3	0.5	3.5	2.3	
	Fire Watermist pump	138.3	71.6	88.0	94.9	0.86	75.4										
	Emergency Fire Pump	162.7	75.1	105.0	95.2	0.87	78.9										
	Total load								378	273		378	273		389	280	

Tag No.	Load Description	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Disaster relief			Harbour			Idle			Remarks
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	
SE-15000																	
450V Emergency Switchboard																	
Location - EDG Room																	
Feeders																	
	Steering Gear 2	162.7	86.0	105.0	95.2	0.9	90.3										
	Emergency Lighting Substation FZ1&2	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Substation FZ3	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Substation FZ4&5	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting Galley Substation	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3	1.0	38.9	34.3	
	Emergency Lighting ER 1	8.4	4.0		90.0	0.8	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9	
	Emergency Lighting ER 2	8.4	4.0		90.0	0.8	4.4	1.0	4.4	3.9	1.0	4.4	3.9	1.0	4.4	3.9	
	Bridge UPS 1	49.4	30.0		93.0	0.9	32.3	1.0	32.3	15.6	1.0	32.3	15.6	0.1	3.2	1.6	
	Bridge UPS 2	49.4	30.0		93.0	0.9	32.3	1.0	32.3	15.6	1.0	32.3	15.6	0.1	3.2	1.6	
	PA/GA UPS 1	24.7	15.0		93.0	0.9	16.1	0.1	1.6	0.8	0.1	1.6	0.8	0.1	1.6	0.8	
	PA/GA UPS 2	24.7	15.0		93.0	0.9	16.1	0.1	1.6	0.8	0.1	1.6	0.8	0.1	1.6	0.8	
	Battery Charger LB #1	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #2	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #3	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #4	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #5	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #6	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #7	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger LB #8	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	
	Battery Charger Rescue Boat	4.8	3.0		95.0	0.9	3.2	0.2	0.6	0.3	0.2	0.6	0.3	0.2	0.6	0.3	
Starters																	
	Fire Water Pump 3	162.7	75.0	105.0	95.2	0.9	78.8										
	Davit Winch LB#1	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#2	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#3	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#4	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#5	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#6	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#7	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch LB#8	9.0	3.7	4.6	83.2	0.8	4.4										
	Davit Winch Rescue Boat	35.3	18.0	21.3	91.0	0.9	19.8										
	ECR 1 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.5	0.6	0.5	0.3	0.5	0.5	0.3	0.5				
	ECR 2 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.5	0.6										
	ECR 1 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	1.0	11.3	7.0	1.0	11.3	7.0				
	ECR 2 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3										
	HV Switchboard 1 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	1.0	11.3	7.0	1.0	11.3	7.0	0.1	1.1	0.7	
	HV Switchboard 2 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3							0.1	1.1	0.7	
	Galley Exhaust Fan	6.7	3.0	3.5	83.6	0.8	3.6	1.0	3.6	2.7	1.0	3.6	2.7	1.0	3.6	2.7	
	Steering Gear Rm Fan	2.8	1.0	1.3	76.5	0.8	1.3	1.0	1.3	1.0	1.0	1.3	1.0	1.0	1.3	1.0	
	Paint Lkr Exhaust Fan	2.0	0.8	0.9	79.2	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
	Inergen Rm Exhaust Fan 2	1.7	0.6	0.7	78.5	0.6	0.8	1.0	0.8	1.0	1.0	0.8	1.0	0.5	0.4	0.5	
	Ventilation Fan 2 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.8	7.0	0.5	3.5	2.3	0.5	3.5	2.3	0.5	3.5	2.3	
	Fire Watermist pump	138.3	71.6	88.0	94.9	0.9	75.4										
	Emergency Fire Pump	162.7	75.1	105.0	95.2	0.9	78.9										
	Total load								310	233		310	233		219	185	

Tag No.	SE-15000 450V Emergency Switchboard Location - EDG Room	FLC Amps	Abs'd. power (kW)	Motor & Load Rating (kW)	Eff @ LF (%)	Pf @ LF	Input power (kW)	Laid up			Emergency			Remarks		
								Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)	Util.& Simult. coeff.	Cons'd power (kW)	Cons'd power (kVAr)
Feeders																
	Steering Gear 2	162.7	86.0	105.0	95.2	0.9	90.3				1.0	90.3	51.2			
	Emergency Lighting Substation FZ1&2	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3			
	Emergency Lighting Substation FZ3	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3			
	Emergency Lighting Substation FZ4&5	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3			
	Emergency Lighting Galley Substation	73.9	35.0		90.0	0.8	38.9	1.0	38.9	34.3	1.0	38.9	34.3			
	Emergency Lighting ER 1	8.4	4.0		90.0	0.8	4.4	1.0	4.4	3.9	1.0	4.4	3.9			
	Emergency Lighting ER 2	8.4	4.0		90.0	0.8	4.4	1.0	4.4	3.9	1.0	4.4	3.9			
	Bridge UPS 1	49.4	30.0		93.0	0.9	32.3	0.3	9.7	4.7	1.0	32.3	15.6			
	Bridge UPS 2	49.4	30.0		93.0	0.9	32.3	0.3	9.7	4.7	1.0	32.3	15.6			
	PA/GA UPS 1	24.7	15.0		93.0	0.9	16.1	0.1	1.6	0.8	1.0	16.1	7.8			
	PA/GA UPS 2	24.7	15.0		93.0	0.9	16.1	0.1	1.6	0.8	1.0	16.1	7.8			
	Battery Charger LB #1	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #2	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #3	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #4	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #5	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #6	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #7	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger LB #8	3.2	2.0		95.0	0.9	2.1	0.2	0.4	0.2	0.2	0.4	0.2			
	Battery Charger Rescue Boat	4.8	3.0		95.0	0.9	3.2	0.2	0.6	0.3	0.2	0.6	0.3			
Starters																
	Fire Water Pump 3	162.7	75.0	105.0	95.2	0.9	78.8				1.0	78.8	44.6			
	Davit Winch LB#1	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#2	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#3	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#4	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#5	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#6	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#7	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch LB#8	9.0	3.7	4.6	83.2	0.8	4.4				1.0	4.4	3.5			
	Davit Winch Rescue Boat	35.3	18.0	21.3	91.0	0.9	19.8				1.0	19.8	12.3			
	ECR 1 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.5	0.6	0.5	0.3	0.5	1.0	0.6	1.0			
	ECR 2 Ventilation Fan 2	1.7	0.4	0.5	66.0	0.5	0.6	0.5	0.3	0.5	1.0	0.6	1.0			
	ECR 1 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	0.2	2.3	1.4	1.0	11.3	7.0			
	ECR 2 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	0.2	2.3	1.4	1.0	11.3	7.0			
	HV Switchboard 1 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	0.2	2.3	1.4	1.0	11.3	7.0			
	HV Switchboard 2 Air conditioning package	21.7	10.0	12.7	88.5	0.9	11.3	0.2	2.3	1.4	1.0	11.3	7.0			
	Galley Exhaust Fan	6.7	3.0	3.5	83.6	0.8	3.6	1.0	3.6	2.7	1.0	3.6	2.7			
	Steering Gear Rm Fan	2.8	1.0	1.3	76.5	0.8	1.3	1.0	1.3	1.0	1.0	1.3	1.0			
	Paint Lkr Exhaust Fan	2.0	0.8	0.9	79.2	0.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
	Inergen Rm Exhaust Fan 2	1.7	0.6	0.7	78.5	0.6	0.8	0.5	0.4	0.5	1.0	0.8	1.0			
	Ventilation Fan 2 Ro-Ro Deck	11.2	6.0	6.3	85.6	0.8	7.0	0.1	0.7	0.5	1.0	7.0	4.5			
	Fire Watermist pump	138.3	71.6	88.0	94.9	0.9	75.4				1.0	75.4	44.8			
	Emergency Fire Pump	162.7	75.1	105.0	95.2	0.9	78.9				1.0	78.9	44.7			
Total load									239	196		810	528			