

8

7

6

5

4

3

2

1

D

D

C

C

B

B

A

A

GENERAL NOTES

REFERENCES



1. ALASKA REGION RESEARCH VESSEL CONTRACT SPECIFICATIONS, REV D

SHEET INDEX

SHEET NO.	DESCRIPTION	ZONE	REV	DESCRIPTION	DATE	APPD
1	GENERAL NOTES, REFERENCES, REVISIONS	1-C	A	1. UPDATED REFERENCES TO LIST THE MOST CURRENT CONTRACT SPECIFICATIONS.	8/12/09	JAS
2	PROPULSION SWITCHBOARD SUMMARY					
3	480V SHIP SERVICE SWITCHBOARD SUMMARY					
4	120V CLEAN POWER SWITCHBOARD					
5	480V AUXILIARY MACHINERY MCC NO. 1					
6	480V AUXILIARY MACHINERY MCC NO. 2					
7	480V SHIP SERVICE VENTILATION MCC (MAIN DECK & BELOW)					
8	480V SHIP SERVICE VENTILATION POWER PANEL					
9	480V SHIP SERVICE VENTILATION MCC (ABOVE MAIN DECK)					
10	480V HOT WATER HEATING MCC					
11	FAN COIL UNIT POWER PANEL					
12	GALLEY/MESS AREA POWER PANELS					
13	MACHINERY SPACE 480V POWER PANEL NO. 1					
14	MACHINERY SPACE 480V POWER PANEL NO. 2					
15	SCIENCE VAN 480V POWER PANEL					
16	HANGAR-BALTIC ROOM 480V POWER PANEL					
17	EMERGENCY SWITCHBOARD					
18	120V EMERGENCY SWITCHBOARD SECTION					
19	COMPARTMENT LIGHTING CALCULATIONS					

REVISIONS

DRAWING REVIEWED BY ABS, LETTER REFERENCE 350984, DATED 6/18/2008. ALL ABS TECHNICAL COMMENTS HAVE BEEN INCORPORATED IN THIS REVISION.



UNIVERSITY OF ALASKA FAIRBANKS  
FAIRBANKS, ALASKA  
ALASKA REGION RESEARCH VESSEL  
ELECTRICAL LOAD ANALYSIS & LIGHTING CALCULATIONS  
KEY PLAN & NOTES

THE GLOSTEN ASSOCIATES  
Consulting Engineers Serving the Marine Community

1201 Western Avenue, Suite 200  
Seattle, Washington 98101-2921  
TEL: 206.824.7990  
FAX: 206.822.9117  
WEB: www.glosten.com

HALF SIZE PRINT

Drawn by	Date	Checked by	Date	Approved by	Date
JWH	8/12/09	MMF	8/12/09	DHK	8/12/09
Scale	Drawing Number		Rev		
NO SCALE	07096-320-02 Sheet 1 of 19				A

8

7

6

5

4

3

2

1

The Glostén Associates, Inc.		ELECTRICAL LOAD ANALYSIS																		8/12/2009	
Seattle, Washington		Client: University of Alaska																		By: JWH	
		Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
SWITCHBOARD SUMMARY																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW		Remarks							
<b>PROPULSION BUS</b>	Propulsion Motor No. 1	690	3000.0	2238.0	0.90	2014.2	0.9	2014.2	0.4	895.2	0.4	895.2	0.1	223.8	0.4	895.2	0.0	0.0	0.0	0.0	
	Propulsion Motor No. 2	690	3000.0	2238.0	0.90	2014.2	0.9	2014.2	0.4	895.2	0.4	895.2	0.1	223.8	0.4	895.2	0.0	0.0	0.0	0.0	
	Bow Thruster	690	920.0	686.3	0.0	0.0	0.0	0.0	0.4	274.5	0.4	274.5	0.2	137.3	0.0	0.0	0.0	0.0	0.0	0.0	
<b>690V DISTR BUS</b>	Spare																				
	Spare																				
	<b>690 Volt Bus Sub-Totals</b>	690		5162.3		4028.4		4028.4		2064.9		2064.9		584.9		1790.4		0.0		0.0	
	<b>480V Bus Sub-Totals</b>	480		4112.3		851.8		854.8		971.3		1170.8		909.0		850.0		276.5		709.9	
	<b>TOTALS</b>			<b>9274.6</b>		<b>4880.2</b>		<b>4883.2</b>		<b>3036.2</b>		<b>3235.7</b>		<b>1493.9</b>		<b>2640.4</b>		<b>276.5</b>		<b>709.9</b>	
	<b>Total Generator kW</b>			<b>6220</b>																	2x1800 kW, 2x1310 kW
	<b>Emergency Generator kW</b>			<b>350</b>																	
	Percent of Total Ship Service Generator Capacity			149%		78%		79%		49%		52%		24%		42% <sup>**</sup>		79% <sup>*</sup>		11%	
	Percent of Generator Capacity w/ (1) 1800 kW out of service			210%		110%		110%		69%		73%		34%		60% <sup>**</sup>					
* Shows percent of emergency generator capacity																					
<sup>**</sup> 1 Gen. Down Column uses motor loads for 7 knots in SS5 per ABS Rules for Building and Classing Steel Vessels, 2007 4-8-5/5.3.2																					

The Glosten Associates, Inc. Seattle, Washington		ELECTRICAL LOAD ANALYSIS																		8/12/2009	
		Client: University of Alaska																		By: JWH	
		Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
480V SHIP SERVICE SWITCHBOARD SUMMARY																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW		Remarks							
<b>SHIP SERVICE BUS</b>	Storage Reel #1	480	50	38.0	0.0 0.0	0.0 0.0	0.3 11.4	0.0 0.0	0.1 3.8	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Storage Reel #2	480	50	38.0	0.0 0.0	0.0 0.0	0.3 11.4	0.0 0.0	0.1 3.8	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	CTD Winch	480	63.0	47.0	0.0 0.0	0.0 0.0	0.3 14.1	0.3 14.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Hydro Winch	480	63.0	47.0	0.0 0.0	0.0 0.0	0.3 14.1	0.3 14.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Bow Crane	480	30.0	22.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.2 4.5							
	Anchor Windlass	480	50.0	37.3	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Stern A-Frame HPU Motor	480	50.0	37.3	0.0 0.0	0.0 0.0	0.3 11.2	0.3 11.2	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Hydroboom	480	40.0	29.8	0.0 0.0	0.0 0.0	0.3 9.0	0.3 9.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Capstan	480	10.0	7.5	0.0 0.0	0.0 0.0	0.3 2.2	0.3 2.2	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Boarding Ladder Winch	480	10.0	7.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Traction Winch	480	180.0	154.3	0.0 0.0	0.0 0.0	0.3 46.3	0.0 0.0	0.1 15.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Aft Deck Crane (Port)	480	75.0	56.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.1 5.6	0.0 0.0	0.0 0.0	0.0 0.0	0.2 11.2								
	Oil-Fired Boiler	480		10.0	0.8 8.0	0.8 8.0	0.8 8.0	0.8 8.0	0.8 8.0	0.8 8.0	0.8 8.0	0.0 0.0	0.8 8.0								
	Clean Power M-G Set No. 1	480		531.0		200.9	200.9	200.9	200.9		200.9		200.9								
Stand-by	Clean Power M-G Set No. 2	480		0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	Auxiliary Machinery MCC No. 1	480		100.0		32.5	28.6	31.4	31.4		31.4		32.5	9.7							
	Auxiliary Machinery MCC No. 2	480		81.7		19.1	19.1	19.1	19.1		19.1		19.1	9.0							
	SS Vent MCC (Mn Dk & Blw)	480		34.3		28.6	23.3	30.9	30.9		24.0		28.6	19.9							
	Ship Service Ventilation Pwr Pnl	480		130.4		88.8	88.8	88.8	88.8		88.8		88.8	88.8							
	SS Vent MCC (Abv Mn Dk)	480		5.4		4.8	4.8	4.8	4.8		4.8		4.8	4.8							
	Aft Deck Crane (Stbd)	480	75.0	56.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
30kVA	220V Laboratory Power UPS	480		28.5	0.3 8.6	0.3 8.6	0.3 8.6	0.3 8.6	0.3 8.6	0.3 8.6	0.3 8.6	0.0 0.0	0.1 2.9								
50kVA	120V Laboratory Power UPS	480		47.5	0.7 33.3	0.7 33.3	0.7 33.3	0.7 33.3	0.7 33.3	0.7 33.3	0.7 33.3	0.0 0.0	0.3 14.3								
	Galley/Mess Area Power Panels	480		137.5	0.3 41.3	0.3 41.3	0.3 41.3	0.3 41.3	0.3 41.3	0.3 41.3	0.3 41.3	0.0 0.0	0.3 41.3								
	Mchry Space Power Panel No. 1	480		192.6		45.3	45.3	45.3	45.3		45.3		45.3	14.5							
	Mchry Space Power Panel No. 2	480		87.2		12.2	11.7	12.2	12.2		12.2		11.7	9.2							
TBD	Aft Working Deck 480V Rcpt (2)	480	0.0	0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	Water Heater	480		225.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	IMAC System UPS	480		13.9	0.9 12.5	0.9 12.5	0.9 12.5	0.9 12.5	0.9 12.5	0.9 12.5	0.9 12.5	0.0 0.0	0.5 7.0								
	Stbd. Thruster Hydraulic Motor No. 1	480	120	89.52	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.0 0.0	0.0 0.0	0.0 0.0							
	Science Van Power Panel	480		228.6	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Hangar/Baltic Rm 480V Pwr Pnl	480		174.8	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Mchry Space Htr Pwr Pnl	480		92.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.4 37.0	0.0 0.0	0.0 0.0	0.0 0.0	0.4 37.0								
	Main Deck Heater Pwr Pnl	480		19.5	0.4 7.8	0.4 7.8	0.4 7.8	0.4 7.8	0.4 7.8	0.4 7.8	0.4 7.8	0.0 0.0	0.4 7.8								
	01 Level Heater Pwr Pnl	480		44.5	0.4 17.8	0.4 17.8	0.4 17.8	0.4 17.8	0.4 17.8	0.4 17.8	0.4 17.8	0.0 0.0	0.4 17.8								
	02/03/04 Level Heater Pwr Pnl	480		57.0	0.4 22.8	0.4 22.8	0.4 22.8	0.4 22.8	0.4 22.8	0.4 22.8	0.4 22.8	0.0 0.0	0.4 22.8								
	Main Deck Laundry Power Panel	480		18.1	0.2 3.6	0.2 3.6	0.2 3.6	0.2 3.6	0.2 3.6	0.2 3.6	0.2 3.6	0.0 0.0	0.0 0.0	0.0 0.0							
	02 Level Laundry Power Panel	480		24.8	0.3 7.4	0.3 7.4	0.3 7.4	0.3 7.4	0.3 7.4	0.3 7.4	0.3 7.4	0.0 0.0	0.2 5.0								
	Seismic Air Compressor No. 1	480	200.0	149.2	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.9 134.3	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
	Seismic Air Compressor No. 2	480	200.0	149.2	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.9 134.3	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0							
Stand-by	Stbd Thruster Hydraulic Motor No. 2	480	120.0	89.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
Stand-by	Port Thruster Hydraulic Motor No. 2	480	120.0	89.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	Ventilation Fan Coil Unit Pwr Pnl	480		144.9		31.0	31.0	31.0	31.0		29.7		29.7	27.1							
	Hot Water Heating MCC	480		73.0		32.8	31.9	31.5	31.5		31.5		32.8	27.8							
	Vent Intake Mist Eliminator (02 Lvl)	480		41.0	0.9 36.9	0.9 36.9	0.9 36.9	0.9 36.9	0.9 36.9	0.9 36.9	0.9 36.9	0.0 0.0	0.9 36.9	36.9							
Stand-by	Vent Intake Mist Eliminator (02 Lvl)	480		0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	Vent Intake Mist Eliminator (03 Lvl)	480		5.9	0.9 5.3	0.9 5.3	0.9 5.3	0.9 5.3	0.9 5.3	0.9 5.3	0.9 5.3	0.0 0.0	0.9 5.3	5.3							
Stand-by	Vent Intake Mist Eliminator (03 Lvl)	480		0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	Stand-By						
	Capac Cathodic Protection System	480		8.6	0.7 6.0	0.7 6.0	0.7 6.0	0.7 6.0	0.7 6.0	0.7 6.0	0.7 6.0	0.0 0.0	0.7 6.0	6.0							
TBD	Heat Trace System	480		25.0	0.7 17.5	0.7 17.5	0.7 17.5	0.7 17.5	0.7 17.5	0.7 17.5	0.7 17.5	0.0 0.0	0.7 17.5	17.5							
	120V Ship Service Receptacle System	480		18.0	0.4 7.2	0.4 7.2	0.4 7.2	0.4 7.2	0.4 7.2	0.4 7.2	0.4 7.2	0.0 0.0	0.4 7.2	7.2							
	Port Thruster Hydraulic Motor No. 1	480	120	89.52	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.3 26.9	0.0 0.0	0.0 0.0	0.0 0.0	20 kVA Transformer						
	Emergency Switchboard Bus-Tie	480		276.5		66.1	79.7	66.1	66.1		66.1		276.5	45.9							
	<b>Ship Service Bus Sub-Totals</b>	480		4112.3		851.8	854.8	971.3	1170.8		909.0		850.0	276.5	709.9						
														948.8	Shore Power Amps (480V, 3Ph)						

Circuit Number or Ckt Bkr Position		Load Description	Voltage E	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW	Remarks
		Mchry Space Lighting Panel	208/120	20.6	0.9 18.54	0.9 18.54	0.9 18.54	0.9 18.54	0.9 18.54	0.9 18.54	0.00 0.00	0.90 18.54	
		Lighting Panel - 1st Platform	208/120	24.6	0.9 22.14	0.9 22.14	0.9 22.14	0.9 22.14	0.9 22.14	0.9 22.14	0.00 0.00	0.90 22.14	
		Lighting Panel - Main Deck (Fwd)	208/120	18.1	0.9 16.29	0.9 16.29	0.9 16.29	0.9 16.29	0.9 16.29	0.9 16.29	0.00 0.00	0.90 16.29	
		Lighting Panel - Main Deck (Aft)	208/120	11.2	0.9 10.08	0.9 10.08	0.9 10.08	0.9 10.08	0.9 10.08	0.9 10.08	0.00 0.00	0.90 10.08	
		Lighting Panel - 01 Level	208/120	26.4	0.65 17.16	0.65 17.16	0.65 17.16	0.65 17.16	0.65 17.16	0.65 17.16	0.00 0.00	0.65 17.16	
		Lighting Panel - 02 Level	208/120	23.3	0.65 15.15	0.65 15.15	0.65 15.15	0.65 15.15	0.65 15.15	0.65 15.15	0.00 0.00	0.65 15.15	
		Lighting Panel - 03, 04 Levels	208/120	41.0	0.65 26.65	0.65 26.65	0.65 26.65	0.65 26.65	0.65 26.65	0.65 26.65	0.00 0.00	0.65 26.65	
		Lab Receptacle Power Panel No. 1	208/120	76.8	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.00 0.00	0.20 15.36	
		Lab Receptacle Power Panel No. 2	208/120	76.8	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.2 15.36	0.00 0.00	0.20 15.36	
		Lab Receptacle Power Panel No. 3	208/120	67.2	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.00 0.00	0.20 13.44	
		Lab Receptacle Power Panel No. 4	208/120	67.2	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.2 13.44	0.00 0.00	0.20 13.44	
		Lab Receptacle Power Panel No. 5	208/120	33.6	0.2 6.72	0.2 6.72	0.2 6.72	0.2 6.72	0.2 6.72	0.2 6.72	0.00 0.00	0.20 6.72	
		Lab Receptacle Power Panel No. 6	208/120	38.4	0.2 7.68	0.2 7.68	0.2 7.68	0.2 7.68	0.2 7.68	0.2 7.68	0.00 0.00	0.20 7.68	
		Emer Gen JW Heater	208	3.0	0.5 1.50	0.5 1.50	0.5 1.50	0.5 1.50	0.5 1.50	0.5 1.50	0.00 0.00	0.50 1.50	0.8
		Power Management Sys UPS No. 1	208	2.8	0.5 1.40	0.5 1.40	0.5 1.40	0.5 1.40	0.5 1.40	0.5 1.40	0.00 0.00	0.50 1.40	0.7
<b>TOTALS(this page)</b>				531.00	200.91	200.91	200.91	200.91	200.91	200.91	0.00	200.91	

The Glostén Associates, Inc.				ELECTRICAL LOAD ANALYSIS																8/12/2009	
Seattle, Washington				Client: University of Alaska												By: JWH					
				Vessel: Alaska Region Research Vessel (ARRV)												Checked By: MMF					
<b>480V AUXILIARY MACHINERY MCC No. 1</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW		Remarks							
	AC Chill Wtr Circ Pump No. 1	480	10	7.16	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1					
	Uncontaminated SW Pmp No. 1	480	5	3.73	0.3 1.1	0.0 0.0	0.3 1.1	0.3 1.1	0.3 1.1	0.3 1.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Lift Station Transfer Pump	480	3	2.09	0.3 0.6	0.3 0.6	0.3 0.6	0.3 0.6	0.3 0.6	0.3 0.6	0.0 0.0	0.0 0.0	0.3 0.6	0.3 0.6	0.0 0.0	See Note 1					
	Bilge Pump No. 2	480	10	7.46	0.1 0.7	0.1 0.7	0.1 0.7	0.1 0.7	0.1 0.7	0.1 0.7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Potable Water Pump No. 1	480	3	2.24	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.0 0.0	0.0 0.0	0.3 0.7	0.3 0.7	0.0 0.0						
	Lab Lift Station Transfer Pump	480	0.75	0.56	0.3 0.2	0.3 0.2	0.3 0.2	0.3 0.2	0.3 0.2	0.3 0.2	0.0 0.0	0.0 0.0	0.3 0.2	0.3 0.2	0.0 0.0						
	Waste Oil Transfer Pump	480	5	3.73	0.1 0.4	0.1 0.4	0.1 0.4	0.1 0.4	0.1 0.4	0.1 0.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Sewage Transfer Pump	480	5	3.73	0.2 0.7	0.2 0.7	0.2 0.7	0.2 0.7	0.2 0.7	0.2 0.7	0.0 0.0	0.0 0.0	0.1 0.4	0.2 0.7	0.0 0.0	0.4					
	Genl Service SW Pump No. 3	480	20	11.71	0.8 9.4	0.8 9.4	0.8 9.4	0.8 9.4	0.8 9.4	0.8 9.4	0.0 0.0	0.0 0.0	0.2 2.3	0.8 9.4	0.0 0.0	See Note 1					
	Sanitary Pump No. 1	480	10	3.45	0.9 3.1	0.9 3.1	0.9 3.1	0.9 3.1	0.9 3.1	0.9 3.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1					
	Centerboard Machinery	480	15	11.19	0.1 1.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.1 1.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Incubator Pump No. 1	480	7.5	5.60	0.3 1.7	0.0 0.0	0.3 1.7	0.3 1.7	0.3 1.7	0.3 1.7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Eng Turning Gear Motor No. 1	480	0.5	0.37	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Eng Turning Gear Motor No. 3	480	0.5	0.37	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0						
	Thruster FW Cooling Pump No. 2	480	5	2.61	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1					
	Aux Mchry FW Clg Pmp No. 1	480	5	2.24	0.9 2.0	0.9 2.0	0.9 2.0	0.9 2.0	0.9 2.0	0.9 2.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1					
	Ballast Pump No. 1	480	10	7.50	0.2 1.5	0.2 1.5	0.2 1.5	0.2 1.5	0.2 1.5	0.2 1.5	0.0 0.0	0.0 0.0	0.2 1.5	0.2 1.5	0.0 0.0	1.5					
	Evaporator No. 1 Waste HW Bstr Pmp	480	1	0.75	0.7 0.5	0.7 0.5	0.7 0.5	0.7 0.5	0.7 0.5	0.7 0.5	0.0 0.0	0.0 0.0	0.5 0.4	0.7 0.5	0.0 0.0	0.4					
	Science Air Compressor	480	3	2.24	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.3 0.7	0.0 0.0	0.0 0.0	0.3 0.7	0.3 0.7	0.0 0.0	0.7					
	Ejector Pump No. 1	480	15	6.34	0.8 5.1	0.8 5.1	0.8 5.1	0.8 5.1	0.8 5.1	0.8 5.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1					
	Elevator Hoist (Aft)	480	20	14.92	0.2 3.0	0.2 3.0	0.2 3.0	0.2 3.0	0.2 3.0	0.2 3.0	0.0 0.0	0.0 0.0	0.2 3.0	0.2 3.0	0.0 0.0	3.0					
<b>Totals</b>		480	154.25	100.0	32.5	28.6	31.4	31.4	31.4	31.4	32.5	0.0	9.7								
Note 1: Connected kW value calculated based on actual used power, not motor HP rating																					





<b>The Glostén Associates, Inc.</b>										<b>ELECTRICAL LOAD ANALYSIS</b>										<b>8/12/2009</b>	
<b>Seattle, Washington</b>										Client: University of Alaska										By: JWH	
										Vessel: Alaska Region Research Vessel (ARRV)										Checked By: MMF	
<b>480V SHIP SERVICE VENTILATION POWER PANEL</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF		Icebreaking DF		Stationkeeping DF		Track Line Ops DF		On Station DF		1 Gen. Down DF		Emergency DF		In Port (Shore Pwr) DF		Remarks
	AHU-1	480	5	3.7	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.0	0.0	0.9	3.4	
	AHU-2	480	5	3.7	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.0	0.0	0.9	3.4	
	AHU-3 (supply)	480	10	7.5	0.9	6.7	0.9	6.7	0.9	6.7	0.9	6.7	0.9	6.7	0.9	6.7	0.0	0.0	0.9	6.7	
	AHU-3 (return)	480	1.5	1.1	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.0	0.0	0.9	1.0	
	AHU-4	480	3	2.2	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.0	0.0	0.3	0.7	
	AHU-5	480	7.5	5.6	0.9	5.0	0.9	5.0	0.9	5.0	0.9	5.0	0.9	5.0	0.9	5.0	0.0	0.0	0.9	5.0	
	Humidifier (AHU-1)	480		5.0	0.9	4.5	0.9	4.5	0.9	4.5	0.9	4.5	0.9	4.5	0.9	4.5	0.0	0.0	0.9	4.5	
	Humidifier (AHU-2)	480		8.5	0.9	7.7	0.9	7.7	0.9	7.7	0.9	7.7	0.9	7.7	0.9	7.7	0.0	0.0	0.9	7.7	
	Humidifier (AHU-3)	480		13.5	0.9	12.2	0.9	12.2	0.9	12.2	0.9	12.2	0.9	12.2	0.9	12.2	0.0	0.0	0.9	12.2	
	Humidifier (AHU-4)	480		20.5	0.3	6.2	0.3	6.2	0.3	6.2	0.3	6.2	0.3	6.2	0.3	6.2	0.0	0.0	0.3	6.2	
	Humidifier (AHU-5)	480		9.5	0.9	8.6	0.9	8.6	0.9	8.6	0.9	8.6	0.9	8.6	0.9	8.6	0.0	0.0	0.9	8.6	
	Humidifier (AHU-6)	480		49.5	0.6	29.7	0.6	29.7	0.6	29.7	0.6	29.7	0.6	29.7	0.6	29.7	0.0	0.0	0.6	29.7	
	<b>Totals</b>	480	32.0	130.4		88.8		88.8		88.8		88.8		88.8		88.8	0.0			88.8	

The Glost Associates, Inc.		ELECTRICAL LOAD ANALYSIS																		8/12/2009	
Seattle, Washington		Client: University of Alaska																		By: JWH	
		Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
<b>480V SHIP SERVICE VENTILATION MCC (ABV MN DK)</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF	kW	Icebreaking DF	kW	Stationkeeping DF	kW	Track Line Ops DF	kW	On Station DF	kW	1 Gen. Down DF	kW	Emergency DF	kW	In Port (Shore Pwr) DF	kW	Remarks
	Aux Machinery Room Supply Fan	480	1.5	0.9	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.9	0.8	0.0	0.0	0.9	0.8	See Note 1
	MSD Room Supply Fan	480	1	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.9	0.5	0.0	0.0	0.9	0.5	See Note 1
	Main Deck & 01 Lvl Aft Spaces Supply	480	1	0.7	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.6	0.0	0.0	0.9	0.6	See Note 1
	Lift Machinery Room (05-30-0) Supply	480	0.25	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.0	0.0	0.9	0.1	See Note 1
	Stairwell Supply Fan	480	0.25	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.0	0.0	0.9	0.1	See Note 1
	Aux Machinery Room Exhaust Fan	480	0.75	0.4	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.0	0.0	0.9	0.3	See Note 1
	MSD Room Exhaust Fan	480	0.75	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.0	0.0	0.9	0.4	See Note 1
	Fwd Observation Lab Hood Exhaust	480	0.25	0.1	0.5	0.0	0.5	0.0	0.5	0.0	0.5	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.5	0.0	See Note 1
	04/03 Lvl Spaces Exhaust Fan	480	0.25	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.0	0.0	0.9	0.1	See Note 1
	02 Lvl Spaces Exhaust Fan	480	0.75	0.5	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.0	0.0	0.9	0.4	See Note 1
	01 Lvl Spaces Exhaust Fan	480	0.75	0.5	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.9	0.4	0.0	0.0	0.9	0.4	See Note 1
	Main Deck & 1st Platf Spaces Exhaust	480	2	1.1	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.0	0.0	0.9	1.0	See Note 1
	Lift Trunk Exhaust Fan	480	0.25	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.9	0.1	0.0	0.0	0.9	0.1	See Note 1
	<b>Totals</b>	480	9.75	5.4		4.8		4.8		4.8		4.8		4.8		4.8		0.0		4.8	
Note 1: Connected kW value calculated based on actual used power, not motor HP rating																					

The Glostén Associates, Inc.				ELECTRICAL LOAD ANALYSIS																8/12/2009	
Seattle, Washington				Client: University of Alaska												By: JWH					
				Vessel: Alaska Region Research Vessel (ARRV)												Checked By: MMF					
<b>480V HOT WATER HEATING MCC</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW		Remarks							
	Mn Heating Loop Pmp No. 1	480	30	17.6	0.9 15.8	0.9 15.8	0.9 15.8	0.9 15.8	0.9 15.8	0.9 15.8	0.0 0.0	0.0 0.0	0.9 15.8	0.9 15.8	See Note 1						
Stand-By	Mn Heating Loop Pump No. 2	480	30	17.6	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	Deck Heating/De-Icing Pmp No. 1	480	5	3.3	0.9 3.0	0.5 1.7	0.5 1.7	0.5 1.7	0.5 1.7	0.9 3.0	0.0 0.0	0.0 0.0	0.5 1.7	0.5 1.7	See Note 1						
	Deck Heating/De-Icing Pmp No. 2	480	5	3.3	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.0 0.0	0.0 0.0	0.25 0.8	0.25 0.8	See Note 1						
	Exh Waste Heat Recovery Pmp No. 1	480	2	1.0	0.9 0.9	0.9 0.9	0.9 0.9	0.9 0.9	0.9 0.9	0.9 0.9	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	Exh Waste Heat Recovery Pmp No. 2	480	2	1.0	0.5 0.5	0.9 0.9	0.5 0.5	0.5 0.5	0.5 0.5	0.5 0.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	HVAC/Pre-Combustion Air Pump No. 1	480	20	10.1	0.9 9.1	0.9 9.1	0.9 9.1	0.9 9.1	0.9 9.1	0.9 9.1	0.0 0.0	0.0 0.0	0.9 9.1	0.9 9.1	See Note 1						
Stand-By	HVAC/Pre-Combustion Air Pump No. 2	480	20	10.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	Ballast Tank Heating Pump No. 1	480	5	3.1	0.5 1.5	0.5 1.5	0.5 1.5	0.5 1.5	0.5 1.5	0.5 1.5	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	Ballast Tank Heating Pump No. 2	480	5	3.1	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.25 0.8	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	See Note 1						
	Potable Water Transfer Pump	480	2	1.5	0.2 0.3	0.2 0.3	0.2 0.3	0.2 0.3	0.2 0.3	0.2 0.3	0.0 0.0	0.0 0.0	0.2 0.3	0.2 0.3							
	Waste Hot Water Boost Pump No. 1	480	1	0.7	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.0 0.0	0.0 0.0	0.1 0.1	0.1 0.1							
	Waste Hot Water Boost Pump No. 2	480	1	0.7	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.1 0.1	0.0 0.0	0.0 0.0	0.1 0.1	0.1 0.1							
<b>Totals</b>		<b>480</b>	<b>128</b>	<b>73.0</b>		<b>32.8</b>		<b>31.9</b>		<b>31.5</b>		<b>31.5</b>		<b>31.5</b>		<b>32.8</b>		<b>0.0</b>		<b>27.8</b>	
Note 1: Connected kW value calculated based on actual used power, not motor HP rating																					

The Glost Associates, Inc.				ELECTRICAL LOAD ANALYSIS																8/12/2009	
Seattle, Washington				Client: University of Alaska												By: JWH					
				Vessel: Alaska Region Research Vessel (ARRV)												Checked By: MMF					
<b>Fan Coil Unit Power Panel</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit		Icebreaking		Stationkeeping		Track Line Ops		On Station		1 Gen. Down		Emergency		In Port (Shore Pwr)		Remarks
					DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	
	Wet Lab FCU (FCU-1)	480		4.7	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.0	0.0	0.4	1.9	
	Wet Lab FCU (FCU-2)	480		9.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	
	Analytical Lab FCU (FCU-3)	480		4.7	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.4	1.9	0.0	0.0	0.4	1.9	
	Main Lab FCU (FCU-4)	480		9.2	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.0	0.0	0.4	3.7	
	Main Lab FCU (FCU-5)	480		9.2	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.0	0.0	0.2	1.8	
	Main Lab FCU (FCU-6)	480		9.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	
	Elex/Comptr Lab FCU (FCU-7)	480		9.2	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.2	1.8	0.0	0.0	0.2	1.8	
	Elex/Comptr Lab FCU (FCU-8)	480		9.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	
	Elex/Comptr Lab FCU (FCU-9)	480		19.9	0.3	6.0	0.3	6.0	0.3	6.0	0.3	6.0	0.3	6.0	0.3	6.0	0.0	0.0	0.3	6.0	
	Workshop (1-12-1) FCU (FCU-10)	480		9.2	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.4	3.7	0.0	0.0	0.4	3.7	
	Electrical Mchry Room FCU (FCU-11)	480		13.0	0.4	5.2	0.4	5.2	0.4	5.2	0.4	5.2	0.3	3.9	0.3	3.9	0.0	0.0	0.1	1.3	
	Electrical Mchry Room FCU (FCU-12)	480		13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Stand-By
	Bow Thruster Room FCU (FCU-13)	480		12.6	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.0	0.0	0.2	2.5	
	Bow Thruster Room FCU (FCU-14)	480		12.6	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.2	2.5	0.0	0.0	0.2	2.5	
	<b>Totals</b>	480		144.9		31.0		31.0		31.0		31.0		29.7		29.7		0.0		27.1	

The Glosten Associates, Inc.		ELECTRICAL LOAD ANALYSIS																		8/12/2009	
Seattle, Washington		Client: University of Alaska																By: JWH			
		Vessel: Alaska Region Research Vessel (ARRV)																Checked By: MMF			
GALLEY/MESS AREA POWER PANELS																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Connected kW	In Transit		Icebreaking		Stationkeeping		Track Line Ops		On Station		1 Gen. Down		Emergency		In Port (Shore Pwr)		Remarks	
				DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW		
<b>Galley Eqpt Pwr Pnl</b>	Deep Fat Fryer No. 1	208/120	12.0	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.0	0.0	0.3	3.6		
	Deep Fat Fryer No. 2	208/120	12.0	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.0	0.0	0.3	3.6		
	Griddle/Oven & 12" Range	208/120	26.0	0.3	7.8	0.3	7.8	0.3	7.8	0.3	7.8	0.3	7.8	0.3	7.8	0.0	0.0	0.3	7.8		
	Hot Plate	208/120	12.0	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.3	3.6	0.0	0.0	0.3	3.6		
	Mixer	208/120	0.8	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.0	0.0	0.3	0.2		
	Portable Food Machine Rcpt	208/120	1.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3	0.3		
	Portable Food Machine Rcpt	208/120	1.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3	0.3		
	Dishwasher	208/120	24.0	0.3	7.2	0.3	7.2	0.3	7.2	0.3	7.2	0.3	7.2	0.3	7.2	0.0	0.0	0.3	7.2		
	Griddle Clamshell	208/120	6.0	0.3	1.8	0.3	1.8	0.3	1.8	0.3	1.8	0.3	1.8	0.3	1.8	0.0	0.0	0.3	1.8		
	Steam-Jacketed Kettle	208/120	6.3	0.3	1.9	0.3	1.9	0.3	1.9	0.3	1.9	0.3	1.9	0.3	1.9	0.0	0.0	0.3	1.9		
	Scullery Area Pulper	208/120	1.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.0	0.0	0.3	0.5		
	Prep Area Pulper	208/120	1.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.0	0.0	0.3	0.5		
	Proofer	208/120	5.0	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5	0.3	1.5	0.0	0.0	0.3	1.5		
	Convection Ovens (2)	208/120	13.2	0.3	4.0	0.3	4.0	0.3	4.0	0.3	4.0	0.3	4.0	0.3	4.0	0.3	4.0	0.3	4.0		
<b>Galley/Mess Pwr Pnl</b>	Galley Refrigerator Fan	208/120	0.4	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Galley Freezer Fan	208/120	0.4	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Gaylord Hood Controls	208/120	0.5	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.0	0.0	0.3	0.2		
	Juice/Iced Tea Dispenser	208/120	1.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.3	0.3		
	Microwave Oven No. 1	208/120	1.9	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.0	0.0	0.3	0.6		
	4-Pan Food Warmer	208/120	3.6	0.3	1.1	0.3	1.1	0.3	1.1	0.3	1.1	0.3	1.1	0.3	1.1	0.0	0.0	0.3	1.1		
	4-Pan Salad Bar	208/120	0.3	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Microwave Oven No. 2	208/120	1.9	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.0	0.0	0.3	0.6		
	Coffee Maker	208/120	2.6	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8	0.3	0.8	0.0	0.0	0.3	0.8		
	Undercounter Ice Maker	208/120	0.5	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Undercounter Refrigerator	208/120	0.2	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Undercounter Freezer	208/120	0.2	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1	0.0	0.0	0.3	0.1		
	Milk Dispenser	208/120	0.1	0.3	0.04	0.3	0.04	0.3	0.04	0.3	0.0	0.3	0.04	0.3	0.0	0.0	0.0	0.3	0.04		
	Toaster Receptacle	208/120	1.8	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.0	0.0	0.3	0.5		
<b>TOTALS(this page)</b>				137.5		41.3		41.3		41.3		41.3		41.3		4.0		41.3			

The Glostén Associates, Inc.	ELECTRICAL LOAD ANALYSIS																		8/12/2009	
Seattle, Washington	Client: University of Alaska																		By: JWH	
	Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
MACHINERY SPACE 480V POWER PANEL NO. 1																			Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW		Remarks						
	Fuel Oil Purifier No. 1	480		29.6	1.0 29.6	1.0 29.6	1.0 29.6	1.0 29.6	1.0 29.6	1.0 29.6	0.0 0.0	0.1 3.0								
	Ship Service Refr Plant No. 1	480	10	7.5	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.0 0.0	0.5 3.7								
	Chill Wtr Refr Plant Cmprsr	480		104.1	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0								
15kVA	Workshop 208/120V Pwr Pnl	480		8.5	0.1 0.9	0.1 0.9	0.1 0.9	0.1 0.9	0.1 0.9	0.1 0.9	0.0 0.0	0.1 0.9								
	Welder (Workshop)	480		13.0	0.1 1.3	0.1 1.3	0.1 1.3	0.1 1.3	0.1 1.3	0.1 1.3	0.0 0.0	0.1 1.3								
	Lathe (Workshop)	480	2	1.5	0.1 0.2	0.1 0.2	0.1 0.2	0.1 0.2	0.1 0.2	0.1 0.2	0.0 0.0	0.1 0.2								
	Evaporator No. 1	480		6.7	0.8 5.4	0.8 5.4	0.8 5.4	0.8 5.4	0.8 5.4	0.8 5.4	0.0 0.0	0.0 0.0								
	No. 3 Engine JW Heater	480		9.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.3 2.7								
	Climate Control Chamber Refr	480	10	7.5	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.5 3.7	0.0 0.0	0.3 2.2								
	Marine Sanitation Device	480		5.3	0.1 0.5	0.1 0.5	0.1 0.5	0.1 0.5	0.1 0.5	0.1 0.5	0.0 0.0	0.1 0.5								
	<b>TOTALS(this page)</b>		22	192.6	45.3	45.3	45.3	45.3	45.3	45.3	0.0	14.5								

<b>The Glostten Associates, Inc.</b>				<b>ELECTRICAL LOAD ANALYSIS</b>																<b>8/12/2009</b>	
<b>Seattle, Washington</b>				Client: University of Alaska																By: JWH	
				Vessel: Alaska Region Research Vessel (ARRV)																Checked By: MMF	
<b>MACHINERY SPACE 480V POWER PANEL NO. 2</b>																				Job Number: 07096.0	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit		Icebreaking		Stationkeeping		Track Line Ops		On Station		1 Gen. Down		Emergency		In Port (Shore Pwr)		Remarks
					DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	
	Fuel Oil Purifier No. 2	480		29.6	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	
	Ship Service Refr Plant No. 2	480	10	7.5	0.1	0.7	0.1	0.7	0.1	0.7	0.1	0.7	0.1	0.7	0.1	0.7	0.0	0.0	0.1	0.7	
	Oil/Water Separator	480	0.5	0.4	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.9	0.3	0.0	0.0	0.1	0.0	
	Incinerator	480		15.0	0.1	1.5	0.1	1.5	0.1	1.5	0.1	1.5	0.1	1.5	0.1	1.5	0.0	0.0	0.0	0.0	
	Evaporator No. 2	480		6.7	0.8	5.4	0.8	5.4	0.8	5.4	0.8	5.4	0.8	5.4	0.8	5.4	0.0	0.0	0.0	0.0	
	No. 2 Engine JW Heater	480		9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	
	No. 4 Engine JW Heater	480		9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	
	Science Freezer Compressor	480	10	7.5	0.5	3.7	0.5	3.7	0.5	3.7	0.5	3.7	0.5	3.7	0.5	3.7	0.0	0.0	0.3	2.2	
	Trash Compactor	480		2.6	0.2	0.5	0	0.0	0.2	0.5	0.2	0.5	0.2	0.5	0	0.0	0.0	0.0	0.3	0.8	
<b>TOTALS(this page)</b>				20.5	87.19		12.19		11.67		12.19		12.19		12.19		11.67		0.00		9.20

<b>The Glosten Associates, Inc.</b>				<b>ELECTRICAL LOAD ANALYSIS</b>																<b>8/12/2009</b>			
<b>Seattle, Washington</b>				Client: University of Alaska																		By: JWH	
				Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
<b>SCIENCE VAN 480V POWER PANEL</b>																				Job Number: 07096.01			
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF kW	Icebreaking DF kW	Stationkeeping DF kW	Track Line Ops DF kW	On Station DF kW	1 Gen. Down DF kW	Emergency DF kW	In Port (Shore Pwr) DF kW	Remarks										
	480V Science Van Power	480		39.90	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.0 0.00	0.2 7.98											
	480V Science Van Power	480		39.90	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.0 0.00	0.2 7.98											
	480V Science Van Power	480		39.90	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.0 0.00	0.2 7.98											
	480V Science Van Power	480		39.90	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.5 19.95	0.0 0.00	0.2 7.98											
	208Y/120V Van Pwr Pnl	480		69.00	0.0 0.00	0.0 0.00	0.0 0.00	0.0 0.00	0.0 0.00	0.0 0.00	0.0 0.00	0.0 0.00											
<b>TOTALS(this page)</b>				0	228.60	79.80	79.80	79.80	79.80	79.80	0.00	31.92											

<b>The Glostén Associates, Inc.</b>				<b>ELECTRICAL LOAD ANALYSIS</b>																<b>8/12/2009</b>			
<b>Seattle, Washington</b>				Client: University of Alaska																		By: JWH	
				Vessel: Alaska Region Research Vessel (ARRV)																		Checked By: MMF	
<b>HANGAR/BALTIC ROOM POWER PANEL</b>																				Job Number: 07096.01			
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit		Icebreaking		Stationkeeping		Track Line Ops		On Station		1 Gen. Down		Emergency		In Port (Shore Pwr)		Remarks		
					DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW		DF	kW
	Retractable Door (Stbd)	480	5	3.7	0.2	0.7	0.0	0.0	0.2	0.7	0.2	0.7	0.2	0.7	0.2	0.7	0.0	0.0	0.1	0.4			
	Retractable Door (Aft)	480	7.5	5.6	0.2	1.1	0.0	0.0	0.2	1.1	0.2	1.1	0.2	1.1	0.2	1.1	0.0	0.0	0.1	0.6			
40 Amp	480V Receptacle	480		30.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.0	0.0	0.1	3.0			
	Overhead Trolley Hoist	480	1	0.7	0.2	0.1	0.0	0.0	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0			
40 Amp	480V Receptacle	480		30.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.0	0.0	0.1	3.0			
40 Amp	480V Receptacle	480		30.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.1	3.0	0.0	0.0	0.1	3.0			
100 Amp	480V Receptacle-Main Lab	480		74.7	0.1	7.5	0.1	7.5	0.1	7.5	0.1	7.5	0.1	7.5	0.1	7.5	0.0	0.0	0.1	7.5			
<b>TOTALS(this page)</b>				13.5	174.8		18.5		16.5		18.5		18.5		18.5		0.0		17.4				

The Glost Associates, Inc.				ELECTRICAL LOAD ANALYSIS																8/12/2009	
Seattle, Washington				Client: University of Alaska																By: JWH	
				Vessel: Alaska Region Research Vessel (ARRV)																Checked By: MMF	
<b>EMERGENCY SWITCHBOARD</b>																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit DF	Icebreaking kW	Stationkeeping DF	Track Line Ops kW	On Station DF	1 Gen. Down kW	Emergency DF	In Port (Shore Pwr) kW	DF	kW	DF	kW	DF	kW	DF	kW	Remarks
	Fire Pump No. 1	480	40	27.60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	27.6	0.0	0.0	See Note 1
	Bilge Pump No. 1	480	10	7.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	7.5	0.0	0.0	
	Genl SW Service Pump No. 1	480	20	11.71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.7	0.0	0.0	See Note 1
	Elevator Hoist (Fwd)	480	20	14.92	0.2	3.0	0.2	3.0	0.2	3.0	0.2	3.0	0.2	3.0	0.2	3.0	1.0	14.9	0.2	3.0	
	Alternator FW Cooling Pump 1	480	5	1.87	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7	0.9	1.7	1.0	1.9	0.3	0.6	See Note 1
	Searchlight (Port)	480		1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	
	Searchlight (Stbd)	480		1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	
	Lube Oil Transfer Pump No. 1	480	0.5	0.37	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	1.0	0.4	0.1	0.0	
	Fuel Oil Transfer Pump No. 1	480	1.5	1.12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	1.1	0.1	0.1	
	Rescue Boat Davit	480	40	29.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	29.8	0.0	0.0	
	Thruster FW Clg Pmp No. 1	480	5	2.61	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3	0.9	2.3	1.0	2.6	0.0	0.0	See Note 1
	Start/Ship Svce Air Cmprsr No. 1	480	3	2.24	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	0.3	0.7	1.0	2.2	0.3	0.7	
	Refuge Heater Power Panel	480		30.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	30.5	0.0	0.0	
	Watertight Door Power Panel	480		5.84	0.2	1.2	0.2	1.2	0.2	1.2	0.2	1.2	0.2	1.2	0.2	1.2	1.0	5.8	0.2	1.2	
	SSDG No. 1 JW Heater	480		9.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	9.0	0.3	2.7	
	Ships Whistle	480	7.5	5.60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.6	0.0	0.0	
	Power Management Sys UPS No. 2	480		2.8	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4	0.5	1.4	1.0	2.8	0.0	0.0	
	PA/GA, ICP System	480		6.30	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.6	1.0	6.3	0.1	0.6	
	IMAC System UPS	480		13.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	13.9	0.0	0.0	
	Emergency - 120V Section	120		100.80		55.0		68.7		55.0		55.0		55.0		55.0		100.8		37.0	
	<b>TOTALS(this page)</b>			276.52		66.1		79.7		66.1		66.1		66.1		66.1		276.5		45.9	

The Glost Associates, Inc.				ELECTRICAL LOAD ANALYSIS																8/12/2009	
Seattle, Washington				Client: University of Alaska												By: JWH					
				Vessel: Alaska Region Research Vessel (ARRV)												Checked By: MMF					
120V EMERGENCY SWITCHBOARD SECTION																				Job Number: 07096.01	
Circuit Number or Ckt Bkr Position	Load Description	Voltage E	Unit HP	Connected kW	In Transit		Icebreaking		Stationkeeping		Track Line Ops		On Station		1 Gen. Down		Emergency		In Port (Shore Pwr)		Remarks
					DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	DF	kW	
	Navigation Electronics Pwr Pnl	120		30.0	0.8	24.0	0.8	24.0	0.8	24.0	0.8	24.0	0.8	24.0	0.8	24.0	1.0	30.0	0.2	6.0	
	Wheelhouse Emer Ltg Pnl	120		4.0	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4	0.1	0.4	1.0	4.0	0.1	0.4	
	Machinery Space Emer Ltg Pnl	120		5.2	0.9	4.7	0.9	4.7	0.9	4.7	0.9	4.7	0.9	4.7	0.9	4.7	1.0	5.2	0.9	4.7	
	Main Dk & 01 Lvl Emer Ltg Pnl	120		8.4	0.9	7.6	0.9	7.6	0.9	7.6	0.9	7.6	0.9	7.6	0.9	7.6	1.0	8.4	0.9	7.6	
	02, 03 & 04 Emer Ltg Pnl	120		3.8	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	0.9	3.4	1.0	3.8	0.9	3.4	
	Emer Gen Start Battery Charger	120		2.5	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5	0.2	0.5	1.0	2.5	0.2	0.5	
	Navigation Light Panel	120		1.3	0.6	0.8	0.6	0.8	0.6	0.8	0.6	0.8	0.6	0.8	0.6	0.8	1.0	1.3	0.6	0.8	
	MOV Pwr Pnl No. 1 (Fwd)	120		15.2	0.3	4.6	0.6	9.1	0.3	4.6	0.3	4.6	0.3	4.6	0.3	4.6	1.0	15.2	0.3	4.6	
	MOV Pwr Pnl No. 2 (Fwd)	120		15.2	0.3	4.6	0.6	9.1	0.3	4.6	0.3	4.6	0.3	4.6	0.3	4.6	1.0	15.2	0.3	4.6	
	MOV Pwr Pnl No. 3 (Aft)	120		15.2	0.3	4.6	0.6	9.1	0.3	4.6	0.3	4.6	0.3	4.6	0.3	4.6	1.0	15.2	0.3	4.6	
	<b>TOTALS(this page)</b>			100.80		55.02		68.70		55.02		55.02		55.02		55.02		100.80		37.02	

