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NSMV Phase 3 Design
LIGHTSHIP WEIGHT ESTIMATE

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I. Lightship Weight Calculation

A. Executive Summary

As a necessary input to the stability analysis, a calculation of the lightship weight and center of the vessel was carried out. The initial lightship weight estimate prepared for the concept design (CLIN 2) was based mostly on parametric analysis considering the vessels dimensions, propulsion, and type. The initial estimate was then refined by estimating the steel weight of the hull from the calculated weight of the structural members. Phase 3 of the NSMV design includes further refinement of the lightship weight estimate to improve the accuracy with the incorporation of a weight breakdown per the US Navy Ship Work Breakdown System (SWBS) groups. Within these weight groups, weight calculations of individual system components and pieces of major equipment were included to supersede previous parametric estimates. Additionally, refinement of the detailed structural members further continues to increase the accuracy of the weight estimate.

B. US Navy Ship Work Breakdown System (SWBS)

SWBS is the US Navy standard hierarchical breakdown structure used to aid in the design and cost estimation of a ship. Each major shipboard system is assigned a unique numerical group designation by which it is classified. At the highest hierarchical level, SWBS contains nine groups:

1. 100 – Hull Structure
2. 200 – Propulsion Plant
3. 300 – Electrical Plant
4. 400 – Command and Surveillance Equipment
5. 500 – Auxiliary Systems
6. 600 – Outfit & Furnishings
7. 700 – Armament
8. 800 – Integration & Engineering
9. 900 – Shipyard Support Services

Sub-designations within major system groups are used to further organize subsystems and individual pieces of equipment, becoming progressively more detailed. A detailed index of the SWBS number breakdowns can be found in Appendix I.

C. Lightship Weight Summary

It was found that the hull steel weight for the vessel was increased by a couple hundred tons after further refining the structural arrangement and details. The primarily parametric values for machinery and outfitting weight based on the installed power, the size of the vessel and the number of persons onboard have been replaced by refined estimates of actual component weights and centers of gravity. That is the primary reason the lightship weight estimate is reduced for Phase 3.

A breakdown of the overall lightship weight is shown in Table 1 below. The lightship weight totals are as follows:

Weight:	10,750 MT
LCG:	75.52 m fwd of Aft Perpendicular (AP)
VCG:	12.97 m Above Baseline (ABL)
TCG:	0.09 m Starboard (CL)

Table 1: Breakdown of Overall Lightship Weight

SWBS Lightship Weight Breakdown - CLIN 3								
WEIGHT GROUP	DESCRIPTION	CURRENT WEIGHT [MT]	VERTICAL		LONGITUDINAL		TRANSVERSE	
			VCG [m ABL]	MOMENT [MT-m]	LCG [m fwd of AP]	MOMENT [MT-m]	TCG [m +Stbd]	MOMENT [MT-m]
1	HULL STRUCTURE	6,918.6	12.45	86,114	75.67	523,497	0.02	162
2	PROPULSION PLANT	558.8	4.65	2,600	41.14	22,986	-0.06	-34
3	ELECTRIC PLANT	315.3	9.09	2,866	62.00	19,549	-0.04	-14
4	COMMUNICATION EQUIPMENT	26.1	29.3	763	106.2	2,767	0.0	0
5	AUXILIARY SYSTEMS	1,038.0	13.5	13,999	80.99	84,070	0.38	396
6	OUTFIT & FURNISHINGS	1,230.7	17.81	21,913	88.50	108,913	0.34	419
SUBTOTAL: GROUPS 1 - 6		10,087.4	12.71	128,255	75.52	761,782	0.09	929
M1	MARGIN - PRELIM+DETAIL (DETAIL - 8%, 0.3 M KG)	662.6	0.26					
M2	SERVICE LIFE GROWTH MARGIN (3%, 0.1 M KG)	302.6	0.10					
LIGHTSHIP WEIGHT ESTIMATE (AT DELIVERY)								
	LS Disp w/out Design Margin	10,087.4	12.71	128,255	75.52	761,782	0.09	929
	LS Disp WITH Design Margin	10,750.0	12.97		75.518		0.09	
LIGHTSHIP WEIGHT ESTIMATE (AT END OF SERVICE LIFE)								
	LS Disp w/out Service Life Growth Margin	10750.0	12.97		75.52		0.09	
	LS Disp WITH Service Life Growth Margin	11,052.6	13.07		75.52		0.09	
CLIN 2 LIGHTSHIP WEIGHT ESTIMATE								
	LS Displacement - Parametric (For Comparison)	11427	12.58		78.13			

As can be seen, an overall design margin of 8% was applied to the total lightship weight and a 0.26 m margin was applied to the VCG. This design margin is artificial in a sense, as the total lightship displacement with design margin is set at 10,750 MT. The design margin is kept variable, and changes with refinement of the SWBS group weight estimates to maintain the constant total lightship displacement. This is done in order to facilitate a constant lightship weight with regards to stability analyses while the actual lightship weight estimate is continually refined. Similarly, the VCG margin was chosen to maintain a constant VCG of 12.97 m-ABL. A discussion of the final weight and CG margins that will be applied to the completed weight estimate can be found in the NSMV Phase 3 Basis of Design document, Rev0.

SWBS Weight Group 100 – Hull Structure was calculated primarily using output from the finite-element design and analysis program MAESTRO. Structural scantlings were directly inputted into MAESTRO; the total resulting weight and center is calculated within the program and inputted into the SWBS 100 Group tabular weight calculation. Some structural elements, such as propulsion plant equipment foundations, have not yet been included in the MAESTRO model and are thus included as line items in the tabular weight calculation given. A 10% margin is applied to all SWBS group 100 structural weights, and is included as a line item.

Detailed weight estimates by SWBS group can be found in the following Appendices.

Appendix I – SWBS Index

This appendix contains a detailed breakdown of the SWBS number breakdown.

NATIONAL SECURITY MULTI-MISSION VESSEL SHIP WEIGHT BREAKDOWN STRUCTURE INDEX

SWBS # GROUP

100	HULL STRUCTURE
111	SHELL PLATING, SURFACE SHIP
113	INNER BOTTOM
115	STANCHIONS
116	LONGITUDINAL FRAMING
117	TRANSVERSE FRAMING
121	LONGITUDINAL STRUCTURAL BULKHEADS
122	TRANSVERSE STRUCTURAL BULKHEADS
123	TRUNKS AND ENCLOSURES
131	MAIN DECK
132	2ND DECK
133	3RD DECK
134	4TH DECK
151	DECKHOUSE STRUCTURE
152	01 LEVEL
153	02 LEVEL
154	03 LEVEL
155	04 LEVEL
156	05 LEVEL
157	06 LEVEL
161	STRUCTURAL CASTINGS, FORGINGS, AND EQUIV. WELDMENTS
162	STACKS
163	SEA CHESTS
167	HULL STRUCTURAL CLOSURES
168	DECKHOUSE STRUCTURAL CLOSURES
169	SPECIAL PURPOSE CLOSURES AND STRUCTURES
171	MASTS, TOWERS, TETRAPODS
179	SERVICE PLATFORMS
182	PROPULSION PLANT FOUNDATIONS
183	ELECTRIC PLANT FOUNDATIONS
184	COMMAND AND SURVEILLANCE FOUNDATIONS
185	AUXILIARY SYSTEMS FOUNDATIONS
186	OUTFIT AND FURNISHINGS FOUNDATIONS
188	COMMON FOUNDATIONS
196	WELDING & MILL TOL.
197	MATERIAL TOLERANCE
198	FREE FLOODING LIQUIDS
199	HULL REPAIR PARTS AND SPECIAL TOOLS
200	PROPULSION PLANT
202	MACHINERY PLANT CONTROL SYSTEMS
235	ELECTRIC PROPULSION
242	PROPULSION COUPLINGS
243	PROPULSION SHAFTING
244	PROPULSION SHAFT BEARINGS
245	PROPULSORS
252	PROPULSION CONTROL SYSTEM
256	CIRCULATING AND COOLING SEA WATER SYSTEM
259	UPTAKES (INNER CASING)
261	FUEL SERVICE SYSTEM
262	MAIN PROPULSION LUBE OIL SYSTEM
264	LUBE OIL FILL, TRANSFER, AND PURIFICATION
298	PROPULSION PLANT OPERATING FLUIDS
299	PROPULSION PLANT REPAIR PARTS AND SPECIAL TOOLS

300	ELECTRIC PLANT
302	MOTORS AND ASSOCIATED EQUIPMENT
303	PROTECTIVE DEVICES
304	ELECTRIC CABLES
311	ELECTRIC POWER GENERATION
312	EMERGENCY GENERATORS
313	BATTERIES AND SERVICE FACILITIES
314	POWER CONVERSION EQUIPMENT
321	SHIP SERVICE POWER CABLE
322	EMERGENCY POWER CABLE SYSEM
324	SWITCHGEAR AND PANELS
325	ARC FAULT DETECTOR SYSTEMS
331	LIGHTING DISTRIBUTION
332	LIGHTING FIXTURES
342	DIESEL SUPPORT SYSTEMS
398	ELECTRIC PLANT OPERATING FLUIDS
399	ELECTRIC PLANT REPAIR PARTS AND SPECIAL TOOLS
400	COMMUNICATION EQUIPMENT
410	COMPUTERS AND DISPLAYS
420	NAVIGATION SYSTEMS
430	INTERNAL COMMUNICATION SYSTEMS
440	EXTERNAL COMMUNICATION SYSTEMS
450	RADAR SYSTEMS
500	AUXILIARY SYSTEM
503	GENERAL PUMPS
506	OVERFLOWS, AIR ESCAPES AND SOUNDING TUBES
508	THERMAL INSULATION FOR PIPING AND MACHINERY
509	THERMAL INSULATION FOR VENT AND A/C DUCTS
511	COMPARTMENT HEATING SYSTEM
512	VENTILATION SYSTEM
513	MACHINERY SPACE VENTILATION SYSTEM
514	AIR CONDITIONING SYSTEM
516	REFRIGERATION SYSTEM
521	FIREMAIN AND FLUSHING (SEA WATER) SYSTEM
522	SPRINKLER SYSTEM
524	AUXILIARY SEA WATER SYSTEM
526	SCUPPERS AND DECK DRAINS
528	PLUMBING DRAINAGE
529	BALLASTING SYSTEM
531	DISTILLING PLANT
532	COOLING WATER
533	POTABLE WATER
536	AUXILIARY FRESH WATER COOLING
541	FUEL STORAGE AND TRANSFER
542	AVIATION AND GENERAL PURPOSE FUELS
551	COMPRESSED AIR SYSTEMS
555	FIRE EXTINGUISHING SYSTEMS
561	STEERING CONTROL SYSTEMS
562	RUDDER
568	MANEUVERING SYSTEM
572	SHIP STORES AND EQUIPMENT HANDLING SYSTEMS
573	CARGO HANDLING SYSTEMS
575	RAMP AND VEHICLE STOWAGE
581	ANCHOR HANDLING AND STOWAGE SYSTEM
582	MOORING AND TOWING SYSTEM
583	BOATS, BOAT HANDLING AND STOWAGE SYSTEM
593	ENVIRONMENTAL POLLUTION CONTROL SYSTEM
598	AUXILIARY SYSTEMS OPERATING FLUIDS
599	AUXILIARY SYSTEMS REPAIR PARTS AND TOOLS

600	OUTFIT AND FURNISHINGS
611	HULL FITTINGS
612	RAILS, STANCHIONS, AND LIFELINES
621	NON-STRUCTURAL BULKHEADS
622	FLOOR PLATES AND GRATINGS
623	LADDERS
624	NON-STRUCTURAL CLOSURES
625	AIRPORTS, FIXED PORTLIGHTS, AND WINDOWS
631	PAINTING
633	CATHODIC PROTECTION
634	DECK COVERING
635	HULL INSULATION
638	REFRIGERATED SPACES
641	OFFICER AND FACULTY BERTHING AND MESSING SPACES
642	STAFF AND CREW BERTHING AND MESSING SPACES
643	CADET BERTHING AND MESSING SPACES
644	SANITARY SPACES AND FIXTURES
645	LEISURE AND COMMUNITY SPACES
651	COMMISSARY SPACES
652	MEDICAL SPACES
654	UTILITY SPACES
655	LAUNDRY SPACES
661	OFFICES
662	MACHINERY CONTROL CENTERS FURNISHINGS
663	ELECTRONICS CONTROL CENTERS FURNISHINGS
665	WORKSHOPS, LABS, TEST AREAS (INCL PORTABLE TOOLS, EQUIP)
671	LOCKERS AND SPECIAL STOWAGE
672	STOREROOMS AND ISSUE ROOMS
673	CARGO STOWAGE
699	OUTFIT AND FURNISH. REPAIR PARTS AND SPECIAL TOOLS
F00	LOADS (FULL LOAD CONDITION)
F11	SHIPS OFFICERS
F12	SHIPS NONCOMMISSIONED OFFICERS
F13	CADETS
F31	PROVISIONS AND PERSONNEL STORES
F32	GENERAL STORES
F41	DIESEL FUEL
F46	LUBRICATING OIL
F51	SEA WATER
F52	FRESH WATER
F54	HYDRAULIC FLUID
F55	SANITARY TANK LIQUID

Appendix 100 – SWBS 100 - Hull Structure

This appendix contains a detailed weight breakdown of the SWBS 100 - Hull Structure weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]		
100	HULL STRUCTURE, GENERAL														
100	MAESTRO Self Wt	6,192,650.0			12.51	75.79	0.03								
110	Allowance	628,965.0			12.51	75.79	-0.02		102	-4	210	-2.80	156.10		
171	MASTS, TOWERS, TETRAPODS														
171	MAST	15,000.0			35.00	117.00	0.00		157	156	158	116.40	117.90	40%	PHASE 3 REV 0 - HULL OUTFIT SHEET
182	PROPULSION PLANT FOUNDATIONS														
182	FOUNDATIONS, ENGINE, ER1, PORT	8,000.0	1	8,000.0	2.20	58.87	-2.60	ER1	79	73	87	54.15	64.65	45%	ESTIMATE
182	FOUNDATIONS, ENGINE, ER1, STBD	8,000.0	1	8,000.0	2.20	58.87	2.60	ER1	79	73	87	54.15	64.65	45%	
182	FOUNDATIONS, ENGINE, ER2, PORT	8,000.0	1	8,000.0	2.20	46.12	-2.60	ER2	62	55	68	40.65	50.40	56%	
182	FOUNDATIONS, ENGINE, ER2, STBD	8,000.0	1	8,000.0	2.20	46.12	2.60	ER2	62	55	68	40.65	50.40	56%	
182	FOUNDATIONS, MOTOR, PROPULSION, MR1	5,000.0	1	5,000.0	2.20	33.17	0.00	MR1	45	43	48	31.65	35.40	40%	ESTIMATE
182	FOUNDATIONS, MOTOR, PROPULSION, MR2	5,000.0	1	5,000.0	2.20	20.84	0.00	MR2	29	27	32	19.65	23.40	32%	
183	ELECTRIC PLANT FOUNDATIONS														
183	FOUNDATIONS, ELECTRICAL EQPT.	10,000.0	20	500.0	9.00	50.00	0.00		67	50	90	36.90	66.90	44%	ESTIMATE
184	COMMAND AND SURVEILLANCE FOUNDATIONS														
185	AUXILIARY SYSTEMS FOUNDATIONS														
185	FOUNDATIONS, AUX. MACHY	30,000.0			2.50	75.00	0.00		101	51	159	37.65	118.65	46%	ESTIMATE
	Group 100 Summary	6,918,615.0 wt [kg]			12.45 [m-Abv-BL]	75.67 [m-Fwd-AP]	0.02 [m-CL,+Stbd]								

Appendix 200 – SWBS 200 - Propulsion Plant

This appendix contains a detailed weight breakdown of the SWBS 200 - Propulsion Plant weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
200	PROPULSION PLANT															
202	MACHINERY PLANT CONTROL SYSTEMS															
202	CONSOLE, CONTROL	1,850.0	1	1,850.0	8.10	42.00	-8.85	ECR 2	57	50	62	36.90	45.90	57%	E	REF SHIP MATSON
202	CONSOLE, CONTROL	1,850.0	1	1,850.0	8.10	63.52	8.85	ECR 1	85	78	90	57.90	66.90	62%	E	REF SHIP MATSON
235	ELECTRIC PROPULSION															
235	MOTORS, PROPULSION [5.4 MW], MR1	56,000.0	1	56,000.0	4.05	33.55	0.00	MR 1	46	43	48	31.65	35.40	51%	V	GE CUT SHEET SFDC OP891171
235	MOTORS, PROPULSION [5.4 MW], MR2	56,000.0	1	56,000.0	4.05	21.22	0.00	MR2	29	27	32	19.65	23.40	42%		
235	ENGINE, DIESEL, MAIN, ER1 ENGINE STBD	44,500.0	1	44,500.0	4.50	58.87	2.60	ER1	79	73	87	54.15	64.65	45%	V	MAN 7L32/44CR
235	ENGINE, DIESEL, MAIN, ER1 ENGINE PORT	44,500.0	1	44,500.0	4.50	58.87	-2.60	ER1	79	73	87	54.15	64.65	45%		
235	ENGINE, DIESEL, MAIN, ER2 ENGINE STBD	44,500.0	1	44,500.0	4.50	46.12	2.60	ER2	62	55	68	40.65	50.40	56%		
235	ENGINE, DIESEL, MAIN, ER2 ENGINE PORT	44,500.0	1	44,500.0	4.50	46.12	-2.60	ER2	62	55	68	40.65	50.40	56%		
235	SKID, LIQUID MASS, COUPLINGS, ER1 ENGINE STBD	11,125.0	1	11,125.0	4.50	58.87	2.60	ER1	79	73	87	54.15	64.65	45%	E	25% OF WEIGHT
235	SKID, LIQUID MASS, COUPLINGS, ER1 ENGINE PORT	11,125.0	1	11,125.0	4.50	58.87	-2.60	ER1	79	73	87	54.15	64.65	45%		
235	SKID, LIQUID MASS, COUPLINGS, ER2 ENGINE STBD	11,125.0	1	11,125.0	4.50	46.12	2.60	ER2	62	55	68	40.65	50.40	56%		
235	SKID, LIQUID MASS, COUPLINGS, ER2 ENGINE PORT	11,125.0	1	11,125.0	4.50	46.12	-2.60	ER2	62	55	68	40.65	50.40	56%		
235	TRANSFORMER, PROPULSION, MR1	13,500.0	1	13,500.0	8.95	32.60	5.80	MR 1	44	43	46	31.65	33.90	42%	V	GE CUT SHEET SFDC OP891171
235	TRANSFORMER, PROPULSION, MR2	13,500.0	1	13,500.0	8.95	20.30	-1.43	MR 2	28	25	31	18.15	22.65	48%		
235	CONVERTOR, PROPULSION, MR1	4,500.0	1	4,500.0	8.73	31.28	-2.80	MR 1	43	37	48	27.15	35.40	50%	V	GE CUT SHEET SFDC OP891171
235	CONVERTOR, PROPULSION, MR2	4,500.0	1	4,500.0	8.73	15.15	3.10	MR 2	21	16	26	11.40	18.90	50%		
235	RESISTORS, BRAKING, DYNAMIC MR1	1,100.0	1	1,100.0	8.44	36.00	3.10	MR 1	49	48	50	35.40	36.90	40%	V	GE CUT SHEET SFDC OP891171_02
235	RESISTORS, BRAKING, DYNAMIC, MR2	1,100.0	1	1,100.0	8.44	12.05	-3.30	MR 2	17	16	18	11.40	12.90	43%		
242	PROPULSION COUPLINGS															
242	COUPLING, SHAFT	850.0	1	850.0	3.59	26.25	0.00	MTR 1, MTR 2	36	15	51	10.65	37.65	58%	E	
242																
243	PROPULSION SHAFTING															
243	SHAFT (DENSITY = 7850 KG/M3)	39,021.0	5	7,850.0	2.73	18.00	0.00	SHAFT ALLEY	25	7	42	4.90	30.90	50%	C	SOLID SHAFT
243	STERN TUBE	6,500.0	1	6,500.0	2.73	8.40	0.00	SHAFT ALLEY	12	7	16	4.90	11.40	54%	E	REF SHIP
244	PROPULSION SHAFT BEARINGS															
244	PROP. SHAFT BEARINGS	3,298.6	4	750.0	3.73	13.70	0.00	SHAFT ALLEY	19	18	20	12.90	14.40	53%	E	ASSUMED FOUR BEARINGS
245	PROPULSORS															
245	PROPELLER	20,000.0	1	20,000.0	2.75	4.50	0.00	AP	6	5	8	3.50	5.60	48%	E	FROM SIMILAR POWER VESSELS
251	COMBUSTION AIR SYSTEM															
251	STARTING AIR SYSTEM															
251	COMPRESSOR, AIR, STARTING (4)	2,600.0	4	650.0	8.00	52.50	-10.42	ER 1, ER 2	71	51	90	37.65	66.90	51%	V	SPERRE HL2/160, MOTOR INCLUDED ON UNIT
251	RECEIVER, AIR, STARTING (2)	4,000.0	4	1,000.0	8.00	52.50	-10.42	ER 1, ER 2	71	51	90	37.65	66.90	51%	V	KAESER 100 M3/H CAPACITY
251	PIPING - FITTINGS	5,000.0	1	5,000.0	6.00	52.50	-5.00	ER 1, ER 3	71	51	90	37.65	66.90	51%		ESTIMATED
252	PROPULSION CONTROL SYSTEM															
252	PROPULSION CONTROL SYS.	1,700.0	2	850.0	8.00	52.88	0.00	CONTROL RM 1 &	71	51	90	37.65	66.90	52%	E	MATSON REPORT
256	COOLING WATER															
256	MAIN SEA WATER COOLING SYSTEM															
256	PUMP, SW	3,560.0	4	890.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	VERTICAL, MOTOR, 350 M3/H CAP. EACH
256	PUMPS, SW/EMERG. BILGE, SELF-PRIMING	1,780.0	2	890.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	VERTICAL, MOTOR, 350 M3/H CAP. EACH
256	PIPING	6,675.0	1	6,675.0	3.00	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	@ 100% EQPT WEIGHT
256	MAIN FRESH WATER COOLING SYSTEM															
256	PUMP, FW, MAIN	5,340.0	6	890.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	VERTICAL, MOTOR, 50%
256	COOLER, FW, CENTRAL	4,800.0	4	1,200.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	VERTICAL, MOTOR, 350 M3/H CAP. EACH
256	PIPING	12,675.0	1	12,675.0	5.00	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	@ 100% EQPT WEIGHT
259	UPTAKES (INNER CASING)															
259	UPTAKES	6,000.0	5	1,200.0	24.20	52.50	0.00	UPTAKE	71	51	90	37.65	66.90	51%	E.	REF SHIP
261	FUEL SERVICE SYSTEM															

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
261	PUMP, SUPPLY, MAIN	8,200.0	4	2,050.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
261	PUMP, SUPPLY, AUX.	960.0	2	480.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
261	FILTERS, FO METERS,	1,000.0	2	500.0	2.98	52.88	0.00	ER 1, ER 3	71	51	90	37.65	66.90	52%		
261	PIPING	5,000.0	1	5,000.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	C	100% EQPT WEIGHT
261	FUEL TRANSFER & PURIFICATION SYSTEM															
261	PUMP, TRANSFER	960.0	2	480.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
261	PURIFIER	2,000.0	4	500.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	V	ALFA LAVAL 1900 L/HR CAPACITY
261	TRANSFER & PURIFIER PIPING&FITTINGS	12,500.0	1	12,500.0	3.50	91.00	0.00	ER 1, ER 2	122	8	205	5.60	152.60	58%	C	100% EQPT WEIGHT
262	PROPULSION LUBE OIL SYSTEM															
262	PUMP, LUBE OIL - ENGINE MOUNTED	0.0	8	0.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	ESTIMATE
262	PIPING	4,125.0	1	4,125.0	3.98	52.50	0.00	ER 1, ER 2	71	51	90	37.65	66.90	51%	E	REF SHIP
264	LUBE OIL FILL, TRANSFER, AND PURIFICATION															
264	PUMP, PRE-LUBE, MAIN	2,000.0	4	500.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
264	PUMP, PRE-LUBE, AUX.	1,600.0	4	400.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
264	PUMP, TRANSFER	260.0	2	130.0	2.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
264	PURIFIER, LO	920.0	2	460.0	3.50	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
264	COOLER, LO	3,720.0	1	3,720.0	3.50	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	MATSON REF SHIP
264	PIPING	5,312.5	1	5,312.5	3.98	52.88	0.00	ER 1, ER 2	71	51	90	37.65	66.90	52%	E	ESTIMATE
298	PROPULSION PLANT OPERATING FLUIDS															
298	PROP. PLANT OPER. FLUIDS ER 1	5,000.0			4.50	60.00	0.00		81	70	90	51.90	66.90	54%		
298	PROP. PLANT OPER. FLUIDS ER2	5,000.0			4.50	45.00	0.00		61	51	70	37.65	51.90	52%		
299	PROPULSION PLANT REPAIR PARTS AND SPECIAL TOOLS															
299	PROP. REP. PARTS & TOOLS															
299	PROP. REP. PARTS & TOOLS															
	Group 200 Summary	558,757.1			4.65	41.14	-0.06									
		wt [kg]			[m-Abv-BL]	[m-Fwd-AP]	[m-CL,+Stbd]									

Appendix 300 – SWBS 300 - Electrical Plant

This appendix contains a detailed weight breakdown of the SWBS 300 - Electrical Plant weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
300	ELECTRIC PLANT, GENERAL															
311	SHIP SERVICE POWER GENERATION															
311	GENERATOR, MAIN, ER1, PORT	17,100.0	1	17,100.0	4.50	58.87	-2.60	ER1	79	73	87	54.15	64.65	45%	V	GE CUT SHEET SFDC OP891171_02
311	GENERATOR, MAIN, ER1, STBD	17,100.0	1	17,100.0	4.50	58.87	2.60	ER1	79	73	87	54.15	64.65	45%	V	
311	GENERATOR, MAIN, ER1, PORT	17,100.0	1	17,100.0	4.50	46.15	-2.60	ER2	62	55	68	40.65	50.40	56%	V	
311	GENERATOR, MAIN, ER1, STBD	17,100.0	1	17,100.0	4.50	46.15	2.60	ER2	62	55	68	40.65	50.40	56%	V	
312	EMERGENCY GENERATORS															
312	GENERATOR, EMERGENCY, DIESEL, 450 V, 750 KW	7,373.0	1	7,373.0	23.00	43.65	0.00	EDG	59	57	62	42.15	45.90	40%	V	CAT C32
313	BATTERIES AND SERVICE FACILITIES															
313	BATTERIES & SERV. FACIL.	2,600.0	1	2,600.0	32.50	116.80	0.00		157	155	158	115.65	117.90	51%	E	NOVP REF SHIP
314	POWER CONVERSION EQUIPMENT															
314	TRANSFORMER, 2000 kVA	5,334.0	1	5,334.0	8.67	65.40	7.50	HV RM 1	88	85	90	63.15	66.90	60%	V	BIL CUT SHEET
314	TRANSFORMER, 2000 kVA	5,334.0	1	5,334.0	8.67	38.90	-7.50	HV RM 2	53	51	55	37.65	40.65	42%	V	BIL CUT SHEET
314	TRANSFORMER, 2750 kVA	7,937.0	1	7,937.0	9.70	72.50	-11.40	FR 98P	97	94	100	69.90	74.40	58%	V	BIL CUT SHEET
314	TRANSFORMER 2500 Kva, FR 125P	6,260.0	1	6,260.0	9.70	94.00	0.00	Fr. 125 P&S	126	123	130	91.65	96.90	45%	V	BIL CUT SHEET
314	TRANSFORMER 2500 Kva, FR 125S	6,260.0	1	6,260.0	9.70	95.00	0.00		127	123	130	91.65	96.90	64%	V	
314	TRANSFORMER, 2000 kVA	5,334.0	1	5,334.0	12.65	40.10	7.20	FR 55 S	54	51	58	37.65	42.90	47%	V	BIL CUT SHEET
321	SHIP SERVICE POWER CABLE															
321	SHIP SERV. POWER CABLE	100,000.0	1	100,000.0	8.06	59.00	0.00		79	-4	210	-2.80	156.10	39%	E	MATSON REF SHIP
324	SWITCHGEAR AND PANELS															
324	SWITCHBOARD, MAIN, 6.6 kV, FR86P	9,000.0	1	9,000.0	8.73	58.20	-11.40	HV 1	78	70	90	51.90	66.90	42%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, MAIN, 6.6 kV, FR57S	9,000.0	1	9,000.0	8.73	44.00	11.40	HV 2	59	51	70	37.65	51.90	45%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, 450 V, 4th Deck, FR81S	3,750.0	1	3,750.0	8.73	60.50	11.75	ER 1	81	77	88	57.15	65.40	41%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, 450 V, 4th Deck, FR57P	3,750.0	1	3,750.0	8.73	41.50	-11.75	ER 2	56	51	62	37.65	45.90	47%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, 450 V, 4th Deck, FR98P	3,750.0	1	3,750.0	9.70	68.50	-6.20	FR98 P	92	90	96	66.90	71.40	36%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, 450 V, 4th Deck FR 125P	3,750.0	1	3,750.0	9.70	94.50	0.00	FR 125 P	127	123	130	91.65	96.90	54%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, 450 V, 4th Deck FR 125S	3,750.0	1	3,750.0	9.70	94.70	-1.00	FR 125 S	127	123	130	91.65	96.90	58%	V	
324	SWITCHBOARD, 450 V, 3rd Deck FR 62S	3,750.0	1	3,750.0	12.65	46.00	11.40	FR 62 S	62	58	66	42.90	48.90	52%	V	GE CUT SHEET SFDC OP891171_02
324	SWITCHBOARD, EMERGENCY, 450 V, L02 EGR FR61CL	4,500.0	1	4,500.0	23.65	45.00	0.00	EGR	61	56	64	41.40	47.40	60%	V	GE CUT SHEET SFDC OP891172_02
324	SWITCHBOARD, 6.6 kV, 4th DK, FR 127P	3,750.0	1	3,750.0	9.70	94.50	0.00	FR 125 P	127	123	130	91.65	96.90	54%	V	GE CUT SHEET SFDC OP891172_02
324	SWITCHBOARD, 6.6 kV, 4th DK, FR 127S	3,750.0	1	3,750.0	9.70	93.70	-1.00	FR 125 S	126	123	130	91.65	96.90	39%	V	
324	SWITCHBOARD, 6.6 kV, 4th Dk FR97P	3,750.0	1	3,750.0	9.70	68.50	-8.40	FR98 P	92	90	96	66.90	71.40	36%	V	GE CUT SHEET SFDC OP891172_02
324	SWITCHBOARD 6.6 Kv, 2nd Dk FR 54S	3,750.0	1	3,750.0	12.65	40.00	10.50	FR 55 S	54	51	58	37.65	42.90	45%	V	GE CUT SHEET SFDC OP891172_03
324	PANEL, SHOREPOWER, 450 V, 3rd Dk FR68S	937.5	1	937.5	13.10	50.00	11.40	FR 87 S	67	66	70	48.90	51.90	37%	V	1/4 WEIGHT OF SWBD
324	120V LIGHTING TRANSFORMERS	6,400.0	8	800.0	12.00	60.00	0.00		81	45	146	33.15	108.90	35%	V	
331	LIGHTING DISTRIBUTION															
331	LIGHTING DISTRIBUTION	25,000.0	1	25,000.0	13.00	85.00	0.00		114	-4	210	-2.80	156.10	55%	E	NOVP REF SHIP
332	LIGHTING FIXTURES															
332	LIGHTING FIXTURES	5,000.0	1	5,000.0	13.00	85.00	0.00		114	-4	210	-2.80	156.10	55%	E	MATSON REF SHIP
342	DIESEL SUPPORT SYSTEMS															
342	SSDG SILENCERS, ENGINE, ER1, PORT	454.0	5	500.0	5.79	58.87	0.00		79	73	87	54.15	64.65	45%	V	ESTIMATE
342	SSDG SILENCERS, ENGINE, ER1, STBD	454.0	5	500.0	5.79	58.87	0.00		79	73	87	54.15	64.65	45%	V	
342	SSDG SILENCERS, ENGINE, ER2, PORT	454.0	5	500.0	5.79	46.15	0.00		62	55	68	40.65	50.40	56%	V	
342	SSDG SILENCERS, ENGINE, ER2, STBD	454.0	5	500.0	5.79	46.15	0.00		62	55	68	40.65	50.40	56%	V	
342	BELLOWS, ENGINE, ER1, PORT	335.0	4	335.0	5.79	58.87	0.00		79	73	87	54.15	64.65	45%	V	ESTIMATE
342	BELLOWS, ENGINE, ER1, STBD	335.0	4	335.0	5.79	58.87	0.00		79	73	87	54.15	64.65	45%	V	
342	BELLOWS, ENGINE, ER1, PORT	335.0	4	335.0	5.79	46.15	0.00		62	55	68	40.65	50.40	56%	V	
342	BELLOWS, ENGINE, ER1, STBD	335.0	4	335.0	5.79	46.15	0.00		62	55	68	40.65	50.40	56%	V	
398	ELECTRIC PLANT OPERATING FLUIDS															
398	ELECT. PLANT OPER. FLUIDS															

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
398	ELECT. PLANT OPER. FLUIDS															
399	ELECTRIC PLANT REPAIR PARTS AND SPECIAL TOOLS															
399	ELECT. REPAIR PTS. & TOOL															
399	ELECT. REPAIR PTS. & TOOL															
	GROUP 300 SUMMARY	315,325.5 [kg]			9.09 [m-Abv-BL]	62.00 [m-Fwd-AP]	-0.04 [m-CL,+Stbd]									

Appendix 400 – SWBS 400 - Comm. Equipment

This appendix contains a detailed weight breakdown of the SWBS 400 - Comm. Equipment weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
400	COMMUNICATION EQUIPMENT															
410	COMPUTERS AND DISPLAYS															
410	DATA DISPLAY GROUP	2,300.0	1000	2.3	23.93	114.75	0.00	153.8	123	176	91.65	131.40	58%	E	REF SHIP NOPV	
410	DATA PROCESSING SYSTEM	350.0	1000	0.4	23.93	114.75	0.00	153.8	123	176	91.65	131.40	58%	E	REF SHIP NOPV	
410	DIGITAL DATA COMM.	1,750.0	1000	1.8	23.93	114.75	0.00	153.8	123	176	91.65	131.40	58%	E	REF SHIP NOPV	
420	NAVIGATION SYSTEMS															
420	NON-ELECTRONIC NAV. AIDS	88.4	1	88.4	29.70	115.88	0.00	155.3	123	176	91.65	131.40	61%	E	REF SHIP NOPV	
420	ELECTRONIC NAV. AIDS	560.0	1	560.0	29.70	115.88	0.00	155.3	123	176	91.65	131.40	61%	E	REF SHIP NOPV	
420	RADIO	103.4	1	103.4	29.70	115.88	0.00	155.3	123	176	91.65	131.40	61%	E	REF SHIP NOPV	
420	ELECTRONIC NAV. SYSTEM	1,374.0	1	1,374.0	29.70	115.88	0.00	155.3	123	176	91.65	131.40	61%	E	REF SHIP NOPV	
420	INERTIAL NAVIGATION SYS.	2,330.0	1000	2.3	29.70	115.88	0.00	155.3	123	176	91.65	131.40	61%	E	REF SHIP NOPV	
430	INTERNAL COMMUNICATION SYSTEMS															
430	SWITCHBOARDS	2,455.0	1	2,455.0	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV - TOOK 1/2 WEIGHT	
430	TELEPHONE SYSTEM	693.7	1	693.7	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
430	ANNOUNCING SYSTEM	1,080.1	1	1,080.1	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
430	ENTERTAINMENT AND TRAINING SYSTEM	5,000.0	1	5,000.0	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	WAG	
430	ALARM, SAFETY AND WARNING SYSTEM	200.0	1	200.0	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
430	INTEGRATED CONTROL SYSTEM	1,360.1	1	1,360.1	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
430	TV SYSTEM	500.0	1	500.0	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
440	EXTERNAL COMMUNICATION SYSTEMS															
440	RADIO SYSTEMS	4,491.8	1	4,491.8	29.70	100.13	0.00	134.3	123	141	91.65	105.15	63%	E	REF SHIP NOPV	
450	RADAR SYSTEMS															
450	SURFACE SEARCH RADAR	1,021.0	1	1,021.0	39.85	116.25	0.00	155.8	154	158	114.90	117.90	45%	E	REF SHIP NOPV	
450	IDENTIFICATION SYSTEM	404.0	1	404.0	39.85	116.25	0.00	155.8	154	158	114.90	117.90	45%	E	REF SHIP NOPV	
499	COMMUNICATION EQPT. REPAIR PARTS AND SPECIAL TOOLS															
499	COMM. EQPT. REPAIR PARTS & TOOL.															
	Group 400 Summary	26,061.5 wt [kg]			29.28 [m-Abv-BL]	106.17 [m-Fwd-AP]	0.00 [m-CL,+Stbd]									

Appendix 500 – SWBS 500 - Auxiliary Systems

This appendix contains a detailed weight breakdown of the SWBS 500 - Auxiliary Systems weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]		
500	AUXILIARY SYSTEMS, GENERAL														
503	GENERAL PUMPS														
506	OVERFLOWS, AIR ESCAPES AND SOUNDING TUBES														
506	TANK LEVEL INDICATORS, ELECTRONIC	2,000.0	20	100.0	2.80	75.00	0.00		100.8	-4	210	-2.80	156.10	49%	
508	THERMAL INSULATION FOR PIPING AND MACHINERY														
508	INSULATION	5,000.0	1	5,000.0	8.00	75.00	0.00		100.8	-4	210	-2.80	156.10	49%	E WAG
509	THERMAL INSULATION FOR VENT AND A/C DUCTS														
509	INSULATION	3,000.0	1	3,000.0	21.00	75.00	0.00		100.8	-4	210	-2.80	156.10	49%	E WAG
511	COMPARTMENT HEATING SYSTEM														
511	COMPARTMENT HEATING SYSTEM	1,100.0	1	1,100.0	21.00	75.00	0.00		100.8	-4	210	-2.80	156.10	49%	E REF SHIP NOPV
512	VENTILATION SYSTEM														
512	VENTILATION SYSTEM	18,062.5	1000	18.1	15.00	85.00	0.00		114.1	-4	210	-2.80	156.10	55%	E FOR MACHINERY, LABS, WORKSHOPS
513	MACHINERY SPACE VENTILATION SYSTEM														
513	FAN, SUPPLY, ER 1	3,400.0	2	1,700.0	32.00	54.00	0.00		72.8	70	75	51.90	55.65	56%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, ER 2	3,400.0	2	1,700.0	32.00	50.00	0.00		67.5	65	70	48.15	51.90	49%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, MR 1	3,400.0	2	1,700.0	17.80	37.50	0.00		50.8	48	53	35.40	39.15	56%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, MR 2	3,400.0	2	1,700.0	17.80	24.75	0.00		33.8	30	36	21.90	26.40	63%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, AR 1	3,400.0	2	1,700.0	32.00	111.00	0.00		148.8	145	153	108.15	114.15	47%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, AR 2	3,400.0	2	1,700.0	32.00	103.50	0.00		138.8	135	141	100.65	105.15	63%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, AR 3	3,400.0	2	1,700.0	32.00	84.75	0.00		113.8	110	116	81.90	86.40	63%	E PHASE 3 REV 0 - MACHINERY SHEET
513	FAN, SUPPLY, AR 4	3,400.0	2	1,700.0	32.00	78.00	0.00		104.8	100	108	74.40	80.40	60%	E PHASE 3 REV 0 - MACHINERY SHEET
513	DUCTS, MISC.	18,750.0	1	18,750.0	28.45	67.94	0.00		91.4	51	159	37.65	118.65	37%	E WAG
514	AIR CONDITIONING SYSTEM														
514	AC PLANT, CHILLED WATER [340 TONS]	18,902.0	2	9,451.0	3.98	73.65	0.00	AMR 1, AMR 4	99.0	90	108	66.90	80.40	50%	C CARRIER MODEL 30RB
514	AC PLANT, CHILLED WATER [340 TONS]	18,902.0	2	9,451.0	3.98	111.90	0.00	AMR 1, AMR 4	150.0	141	159	105.15	118.65	50%	C CARRIER MODEL 30RB
514	AIR CONDITIONING SYSTEM	21,730.0	1	21,730.0	8.06	90.00	0.00	FAN ROOMS	120.8	70	176	51.90	131.40	48%	E WAG/REF SHIP NOPV
514	AIR HANDLER UNITS	33,000.0	11	3,000.0	23.00	91.00	0.00	FAN ROOMS	122.1	70	176	51.90	131.40	49%	E
516	REFRIGERATION SYSTEM														
516	REFRIGERATION CONDENSER UNITS	3,000.0	2	1,500.0	8.35	56.00	-6.75	REFER STORES	75.5	70	81	51.90	60.15	50%	E IN ER1 ON 4TH DECK
516	REFRIGERATION SYSTEM	5,000.0	1	5,000.0	15.00	74.00	0.00	REFER STORES	99.5	96	103	71.40	76.65	50%	E IN REEFER STORES SPACES
521	FIREMAIN AND FLUSHING (SEA WATER) SYSTEM														
521	PUMP, FIRE AND GENERAL, MAIN	1,780.0	2	890.0	2.48	52.00	0.00	ER1 7 ER2	70.1	51	90	37.65	66.90	49%	E PUMP WEIGHT FROM REF SHIP
521	PUMP, FIRE, EMERGENCY	890.0	1	890.0	2.48	100.00	-10.00	AR2	134.1	123	141	91.65	105.15	62%	E PUMP WEIGHT FROM REF SHIP
521	PIPING, ETC	12,500.0	1	12,500.0	14.00	82.00	0.00		110.1	-4	210	-2.80	156.10	53%	E ESTIMATED
522	RO RO SPACE SPRINKLER SYSTEM														
522	SPRINKLER SYSTEM PUMP SKIDS	6,000.0	2	3,000.0	3.00	91.50	0.00		122.8	108	141	80.40	105.15	45%	
522	SPRINKLER SYSTEM PIPING	10,000.0	2	5,000.0	14.00	70.00	0.00		94.1	15	141	10.65	105.15	63%	ONE IN AMR2 AND ONE IN AMR3 ESTIMATED FOR ACCOM & RORO SPACE
524	AUX. SEA WATER SYSTEM														
524	PUMP, SW	3,560.0	4	890.0	3.98	91.50	0.00	AMR 2, AMR 3	122.8	108	141	80.40	105.15	45%	V VERTICAL, MOTOR, 350 M3/H CAP. EACH
524	PUMP, SW/BILGE	1,780.0	2	890.0	3.98	91.50	0.00	AMR 2, AMR 4	122.8	108	141	80.40	105.15	45%	V VERTICAL, MOTOR, 350 M3/H CAP. EACH
524	PIPING, ETC	6,675.0	1	6,675.0	3.98	91.50	0.00		122.8	8	205	5.60	152.60	58%	E ESTIMATE
526	SCUPPERS AND DECK DRAINS														
526	PIPING, VALVES, FIXTURES	6,250.0	1	6,250.0	14.00	59.00	0.00		79.5	-4	210	-2.80	156.10	39%	E WAG ESTIMATE
528	PLUMBING DRAINAGE														
528	PLUMBING DRAINAGE	18,750.0	1	18,750.0	19.65	87.00	0.00		116.8	70	176	51.90	131.40	44%	REF SHIP NOPV
529	BALLASTING SYSTEM														
529	PUMP, BALLAST	1,120.0	2	560.0	2.98	52.50	0.00	TANK TOP	70.8	51	90	37.65	66.90	51%	V 200 M3/H CAPACITY. IRONPUMP 6/300
529	VALVE, BUTTERFLY, NPS 18	452.0	4	113.0	2.98	52.50	0.00	TANK TOP	70.8	51	90	37.65	66.90	51%	V JOHNSON VALVE
529	VALVE, BUTTERFLY, HYDRAULICALLY OPERATED														

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
529	NPS 12	156.0	2	78.0	2.48	91.50	-2.00	TANK TOP	122.8	108	141	80.40	105.15	45%	E	+ FOR HYD ACTUATOR (30 KG)
529	NPS 8	423.5	11	38.5	2.48	91.50	0.00	TANK TOP	122.8	108	141	80.40	105.15	45%	E	+ FOR HYD ACTUATOR (20 KG)
529	VAVLE, GATE	520.0	10	52.0	2.48	91.50	0.00	TANK TOP	122.8	108	141	80.40	105.15	45%	V	SCV VALVE CATALOG @ NPS 8
529	VALVE, CHECK	80.0	2	40.0	2.48	91.50	0.00	TANK TOP	122.8	108	141	80.40	105.15	45%	V	FERGUSON CATALOG @ NPS 8
529	PIPING	16,576.9	525	31.6	2.48	91.50	0.00	TANK TOP	122.8	8	205	5.60	152.60	58%	E	EST LENGTH @ NPS 8 SCH 40 + supports
531	DISTILLING PLANT															
531	REVERSE OSMOSIS UNIT	8,000.0	2	4,000.0	2.73	89.50	9.37	AMR 2, AMR 3	120.1	108	141	80.40	105.15	37%	V	AQUACHEM MODEL MATRIX S26000
531	PIPING	3,750.0	1	3,750.0	3.50	89.50	2.30		120.1	108	141	80.40	105.15	37%	E	@ 100% EQPT WEIGHT
533	POTABLE WATER															
533	HOT WATER HEATERS WITH PUMPS	8,000.0	8	1,000.0	20.50	93.38	0.00		125.3	108	141	80.40	105.15	52%	E	REF SHIP FOR WEIGHTS
533	HYDROPHORE, 2000 L (1) WITH PUMPS	1,000.0	1	1,000.0	3.98	101.96	-5.25	ARM 1	136.7	130	141	96.90	105.15	61%	E	
533	HYDROPHORE, 1000 L (1) WITH PUMPS	650.0	1	650.0	3.98	101.96	4.64	ARM 2	136.7	130	141	96.90	105.15	61%	E	
533	HYDROPHORE, 500 L (2) WITH PUMPS	800.0	2	400.0	3.98	82.90	-4.36	ARM 1, AMR 2	111.3	108	115	80.40	85.65	48%	E	
533	STERILIZER	600.0	4	150.0	3.98	93.38	0.00		125.3	108	141	80.40	105.15	52%	E	
533	MINERALIZER	600.0	4	150.0	3.98	93.38	0.00		125.3	108	141	80.40	105.15	52%	E	
533	PIPING, ETC.	15,000.0	1	18,750.0	19.65	91.50	0.00		122.8	70	176	51.90	131.40	50%	E	
536	AUX. FRESH WATER COOLING															
541	FUEL STORAGE AND TRANSFER SYSTEM ** SEE SWBS 261															
551	COMPRESSED AIR SYSTEMS															
551	SHIP SERVICE AIR SYSTEM															
551	COMPRESSOR, AIR, SHIP SERVICE (1)	500.0	1	500.0	8.00	51.00	-8.00	ER2	68.8	67	70	49.65	51.90	60%	V	SPERRE HLF2/77, MOTOR INCLUDED ON UNIT
551	RECEIVER, AIR, SERVICE (1)	1,000.0	1	1,000.0	8.50	51.00	-8.00	ER2	68.8	67	70	49.65	51.90	60%	V	KAESER 500 M3/H CAPACITY
551	PIPING, ETC.	6,250.0	1	6,250.0	12.00	85.00	-0.20		114.1	-4	210	-2.80	156.10	55%	E	@ 100% EQPT WEIGHT
551	CONTROL AIR SYSTEM									51	90	37.65	66.90			
551	COMPRESSOR, AIR, CONTROL (2)	1,204.0	2	602.0	8.00	52.50	-8.00	ER 1, ER 2	70.8	51	90	37.65	66.90	51%	V	SPERRE LL2/120, MOTOR INCLUDED ON UNIT
551	RECEIVER, AIR, CONTROL (2)	900.0	2	450.0	8.50	52.50	-8.00	ER 1, ER 2	70.8	51	90	37.65	66.90	51%	V	PHASE 3 REV 0 - MACHINERY SHEET
551	DRYER, AIR, CONTROL (2)	830.0	2	415.0	8.00	52.50	-8.00	ER 1, ER 2	70.8	51	90	37.65	66.90	51%	V	KAESER 1060 CFM REFRIGERATED
551	FILTER, IN-LINE	20.0	2	10.0	8.00	52.50	-8.00	ER 1, ER 2	70.8	51	90	37.65	66.90	51%	E	
551	PIPING, ETC.	3,692.5	1	3,692.5	7.00	52.50	-0.20		70.8	51	90	37.65	66.90	51%	E	@ 100% EQPT WEIGHT
512	RORO VENTILATION SYSTEM															
512	FANS	3,560.0	4	890.0	16.00	32.00	-2.50		43.5	30	58	21.90	42.90	48%	E	ESTIMATED
512	MUSHROOMS/DAMPERS	3,200.0	8	400.0	17.00	32.00	-2.50		43.5	30	58	21.90	42.90	48%	E	ESTIMATED
512	VENT DUCTING	10,737.5	1	10,737.5	17.00	20.00	0.00		27.5	5	58	3.50	42.90	42%	E	ESTIMATED
555	WATER MIST FIRE EXTINGUISHING SYSTEMS															
555	PUMP, MAIN FIRE	3,000.0	2	1,500.0	3.98	91.70	0.00		123.1	108	141	80.40	105.15	46%	E	REF SHIP NOPV
555	PUMP, EMERGENCY FIRE	890.0	1	890.0	3.98	91.70	0.00		123.1	108	141	80.40	105.15	46%	E	REF SHIP NOPV
555	FIRE EXTINGUISHING SYS AND PIPING	8,590.0	1	8,590.0	19.65	87.00	0.00		116.8	70	176	51.90	131.40	44%	E	REF SHIP NOPV
561	STEERING CONTROL SYSTEM															
561	STEERING GEAR UNIT (ROTARY VANE)	20,000.0	1	20,000.0	12.10	0.00	0.00	SG ROOM	0.0	-2	2	-1.40	1.40	50%	V	ROLLS ROYCE CUT SHEET MODEL SR662
561	STEERING GEAR AUX. SYSTEMS AND PIPING	15,000.0	1	15,000.0	12.10	0.00	0.00	SG ROOM	0.0	-2	2	-1.40	1.40	50%	E	ESTIMATE FROM NOPV
562	RUDDER															
562	RUDDER	36,100.0	1	36,100.0	5.94	0.00	0.00	AP	0.0	-2	2	-1.40	1.40	50%	V	BECKER MARINE CUT SHEET 20218 R-1.1
568	MANEUVERING SYSTEM															
568	THRUSTER, FWD - PROP & TUNNEL	15,000.0	1	15,000.0	2.00	138.90	0.00	BT ROOM	186.0	185	187	138.15	139.65	50%	V	BRUNNVOLL
568	THRUSTER, FWD - AZIMUTH UNIT & MOTOR	31,000.0	1	31,000.0	8.50	138.90	0.00	BT ROOM	186.0	185	187	138.15	139.65	50%	V	
568	THRUSTER, FWD - HPU, PANELS	1,595.0	1	1,595.0	11.50	138.90	0.00	BT ROOM	186.0	185	187	138.15	139.65	50%	V	
568	THRUSTER, AFT	12,000.0	1	12,000.0	3.00	25.70	0.00	MR2	35.1	34	36	24.90	26.40	53%	V	BRUNNVOLL
572	SHIP STORES AND EQUIPMENT HANDLING SYSTEMS															
572	TROLLEY, PROVISIONS/ENGINE PARTS ER	16,000.0	2	8,000.0	10.10	52.50	7.20	ER 1 * 2	70.8	51	90	37.65	66.90	51%		ESTIMATE
572	TROLLEY, ER CRANE OVER ENGINES	30,000.0	2	15,000.0	10.10	55.00	0.00	OVER ENGINES	74.1	51	90	37.65	66.90	59%		ESTIMATE

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/V/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents		
572	TROLLEY, PROVISIONS/ENGINE PARTS STORES	16,000.0	2	8,000.0	15.80	53.80	0.00	STORES 2nd DECK	72.5	70	75	51.90	55.65	51%		ESTIMATE
573	CARGO HANDLING SYSTEM															
573	CRANE, STORES, FWD, P/S	7,400.0	2		21.00	133.50	0.00	BOW	178.8	176	180	131.40	134.40	70%	E	PHASE 3 REV 0 - CARGO EQPT SHEET
573	CRANE, CARGO, AFT	25,000.0	1		25.35	33.00	0.00	FLIGHT DECK	44.8	43	47	31.65	34.65	45%	E	PHASE 3 REV 0 - CARGO EQPT SHEET
575	RAMP AND VEHICLE STOWAGE															
575	RAMP	29,050.0	1		15.50	10.65	13.00	RO/RO SPACE	15.0	10	21	7.00	15.15	45%	E	PHASE 3 REV 0 - CARGO EQPT SHEET
581	ANCHOR HANDLING AND STOWAGE SYSTEM															
581	ANCHORS	13,050.0	2	6,525.0	13.95	153.00	0.00	P/S	205.6	203	207	151.20	154.00	64%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
581	ANCHOR CHAINS	93,775.0			11.10	146.25	0.00	P/S	195.9	194	198	144.90	147.70	48%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	MOORING AND TOWING SYSTEM															
582	WINCH, 20 TONS, AFT, PORT	20,000.0	1	20,000.0	13.95	1.05	0.00		1.5	-1	4	-0.70	2.80	50%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	WINCH, 20 TONS, AFT, STBD	20,000.0	1	20,000.0	13.95	1.05	0.00		1.5	-1	4	-0.70	2.80	50%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	WINCH, 20 TONS, AFT, CL	20,000.0	1	20,000.0	13.95	4.55	0.00		6.5	4	9	2.80	6.30	50%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	WINCH, 20 TONS, FWD	35,000.0	1	35,000.0	17.80	139.00	0.00		186.1	185	188	138.15	140.40	38%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	WINDLASS, FWD, PORT	35,000.0	1	35,000.0	17.80	146.00	-3.75		195.6	194	197	144.90	147.00	52%	E	
582	WINDLASS, FWD, STBD	35,000.0	1	35,000.0	17.80	146.00	3.75		195.6	194	197	144.90	147.00	52%	E	
582	MOORING LINES, AFT	1,871.8	6	312.0	15.88	3.75	0.00		5.4	-5	10	-3.50	7.00	69%	E	EQPT CUT SHEET, 500 KN BREAKING
582	MOORING LINES, FWD	1,871.8	6	312.0	14.91	149.00	0.00		199.9	195	205	145.60	152.60	49%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	BOLLARDS, AFT	3,000.0	6	500.0	17.20	3.00	0.00		4.3	-1	10	-0.70	7.00	48%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	BOLLARDS, FWD	3,000.0	6	500.0	17.20	144.00	0.00		192.8	176	210	131.40	156.10	51%	E	
582	CAPSTAN, AFT	1,500.0	1	1,500.0	13.50	3.00	0.00	OW, POOP DECK	4.3	-1	10	-0.70	7.00	48%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
582	CAPSTAN, FWD	1,500.0	1	1,500.0	17.80	139.00	0.00		186.1	176	194	131.40	144.90	56%		
583	BOATS, BOAT HANDLING AND STOWAGE SYSTEM															
583	LIFEBOATS (77 PERSON) [INCL. DAVITS]	75,520.0	8		19.65	82.50	0.00	P/S OTBD	110.8	83	136	61.65	101.40	52%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
583	LIFERAFTS (39 PERSON)	2,300.0	10		21.50	44.25	0.00	P/S OTBD	59.8	50	70	36.90	51.90	49%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
583	RESCUE BOAT WITH DAVIT	2,000.0	1	2,000.0	22.00	35.80	-12.00	PORT MPS	48.5	45	54	33.15	39.90	39%		
583	LIFEVESTS	3,360.0			14.28	76.30	0.00	P/S OTBD	102.5	70	176	51.90	131.40	31%	E	PHASE 3 REV 0 - HULL OUTFIT SHEET
593	ENVIRONMENTAL POLLUTION CONTROL SYSTEM															
593	SEPARATOR, OILY WATER, BILGE	4,000.0	1	4,000.0	3.00	64.00	-8.00	ER 1	86.1	81	90	60.15	66.90	57%	E	REF SHIP
593	INCINERATOR															
593	COMBUSTION CHAMBER	4,950.0	1	4,950.0	12.10	46.50	-3.78	INCINERATOR ROOM	62.8	60	65	44.40	48.15	56%	V	TEAMTEC CUT SHEET
593	FAN, FLUE GAS	800.0	1	800.0	11.40	46.50	-3.78	INCINERATOR ROOM	62.8	60	65	44.40	48.15	56%	V	TEAMTEC CUT SHEET
593	BALLAST WATER TREATMENT SYSTEM	10,000.0	1	10,000.0	4.00	65.00	-5.00		87.5	85	90	63.15	66.90	49%		
593	PUMP, SLUDGE	800.0	2	400.0	3.00	52.50	0.00	ER 1, ER 2	70.8	51	90	37.65	66.90	51%	V	EVAC CATALOG
593	SYSTEM, VHCT	700.0	1	700.0	3.00	114.00	0.00	AMR 1	152.8	141	159	105.15	118.65	66%	E	ESTIMATE
593	SEWAGE TREATMENT PLANTS	8,200.0	1	8,200.0	4.00	73.35	-4.50	AMR 1	98.6	90	108	66.90	80.40	48%		WARTSILA MBR
593	SEWAGE TREATMENT PLANTS	8,200.0	1	8,200.0	4.00	111.60	-4.50	AMR 4	149.6	141	159	105.15	118.65	48%		
593	GREY WATER TREATMENT PLANT	4,000.0	1	4,000.0	4.00	74.60	5.50	AMR4	100.3	90	108	66.90	80.40	57%		WARTSILA MBR
593	VACUUM TOILET RECEIVING TANK	4,000.0	1	4,000.0	4.00	73.35	-4.50	AMR1	98.6	90	108	66.90	80.40	48%		
593	VACUUM TOILET RECEIVING TANK	4,000.0	1	4,000.0	4.00	111.60	-4.50	AMR4	149.6	141	159	105.15	118.65	48%		
598	AUXILIARY SYSTEMS OPERATING FLUIDS															
598	AUX SYS OPERATING FLUIDS, ER	3,000.0			5.00	51.70	0.00		69.7	51	90	37.65	66.90	48%		
598	AUX SYS OPERATING FLUIDS, AMR	5,000.0			5.00	91.50	0.00		122.8	108	141	80.40	105.15	45%		
599	AUXILIARY SYSTEMS REPAIR PARTS AND TOOLS															
599	ER SYS REPAIR PTS & TOOL	7,500.0			8.00	69.40	10.00	ER STORES	93.3	90	98	66.90	72.90	42%		
599	AUX SYS REPAIR PTS & TOOL	5,000.0			9.00	80.00	10.00	AUX STORES	107.5	90	123	66.90	91.65	53%		
Group 500 Summary		1,037,977.4			13.49	80.99	0.38									
		wt [kg]			[m-Abv-BL]	[m-Fwd-AP]	[m-CL,+Stbd]									

Appendix 600 – SWBS 600 – Outfit & Furnishings

This appendix contains a detailed weight breakdown of the SWBS 600 - Outfit & Furnishings weight group.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
600	OUTFIT AND FURNISHINGS, GENERAL															
611	HULL FITTINGS															
611	HULL FITTINGS	2,000.0	1	2,000.0	19.60	90.00	0.00		120.8	-4	210	-2.80	156.10	58%	E	
612	RAILS, STANCHIONS, AND LIFELINES															
612	RAILS, STANS. & LIFELINE	5,000.0	1	5,000.0	24.43	86.25	0.00		115.8	-4	210	-2.80	156.10	56%	E	ESTIMATE 2.0% OF WEIGHT
621	NON-STRUCTURAL BULKHEADS															
621	PANEL, JOINER, 50MM															
621	05 LEVEL	715.6	37	19.2	32.18	125.00	0.00		167.47	155	174	115.65	129.90	66%	C	CHART ROOM, AFT BHD NAV BRIDGE
621	04 LEVEL (FWD)	2,566.1	134	19.2	29.33	108.00	0.00		144.8	123	165	91.65	123.15	52%	C	COMM, NAV LAB - ASSUME SUBDIVIDED 4 SPACES EACH
621	04 LEVEL (AFT)	18,323.7	954	19.2	29.33	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	03 LEVEL (FWD)	13,947.6	726	19.2	26.48	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	CABINS
621	03 LEVEL (AFT)	18,323.7	954	19.2	26.48	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	02 LEVEL (FWD)	15,434.5	804	19.2	23.63	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	CABINS
621	02 LEVEL (AFT)	18,323.7	954	19.2	23.63	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	01 LEVEL (FWD)	11,536.6	601	19.2	20.78	116.25	0.00		155.8	123	176	91.65	131.40	62%	C	CABINS
621	01 LEVEL (AFT)	5,412.2	282	19.2	20.78	72.40	0.00		97.333	70	123	51.90	91.65	52%	C	CABINS
621	MAIN DECK LEVEL (FWD)	8,585.3	447	19.2	17.93	112.50	0.00		150.8	123	176	91.65	131.40	52%	C	ALL SPACES - ASSUME OFF SUBDIV INTO 4, CLASS SUBDIV INTO 2
621	MAIN DECK LEVEL (AFT)	7,402.8	386	19.2	17.93	70.50	0.00		94.8	70	123	51.90	91.65	47%	C	ASSUME OFF SUBDIV INTO 4, HOSP INTO 3, CONF INTO 2
621	MAIN DECK LEVEL (AFT)	2,434.3	127	19.2	18.64	41.25	0.00		55.8	45	65	33.15	48.15	54%	C	MULTIPURPOSE SPACE - ASSUME SUBDIV INTO 4
621	2ND DECK	3,408.8	178	19.2	15.08	112.13	0.50		150.3	123	176	91.65	131.40	52%	C	MESS ROOMS, GALLEY
621	3RD DECK (FWD)	7,044.5	367	19.2	12.23	112.13	0.00		150.3	123	176	91.65	131.40	52%	C	BERTHING
621	3ED DECK (AFT)	7,436.4	387	19.2	12.23	75.00	0.00		100.8	78	123	57.90	91.65	51%	C	ASSUME OFF SUBDIV INTO 4, LARGE CLASSROOM INTO 2
621	PANEL, JOINER, 25MM															
621	05 LEVEL	1,414.5	111	12.7	32.18	125.00	0.00		167.47	155	174	115.65	129.90	66%	C	CHART ROOM, NAV BRIDGE
621	04 LEVEL (FWD)	5,384.0	424	12.7	29.33	111.80	0.00		149.87	123	176	91.65	131.40	51%	C	COMM, NAV LAB, TRAINING BRIDGE
621	04 LEVEL (AFT)	8,329.7	434	19.2	29.33	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	03 LEVEL (FWD)	8,236.8	429	19.2	26.48	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	CABINS
621	03 LEVEL (AFT)	8,870.4	462	19.2	26.48	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	02 LEVEL (FWD)	8,236.8	429	19.2	23.63	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	CABINS
621	02 LEVEL (AFT)	8,870.4	462	19.2	23.63	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	CABINS
621	01 LEVEL (FWD)	9,525.1	496	19.2	20.78	116.25	0.00		155.8	123	176	91.65	131.40	62%	C	CABINS
621	01 LEVEL (AFT)	7,728.9	403	19.2	20.78	72.40	0.00		97.333	70	123	51.90	91.65	52%	C	CABINS
621	MAIN DECK LEVEL (FWD)	9,071.0	472	19.2	17.93	112.50	0.00		150.8	123	176	91.65	131.40	52%	C	ALL SPACES - ASSUME OFF SUBDIV INTO 4, CLASS SUBDIV INTO 2
621	MAIN DECK LEVEL (AFT)	7,575.7	395	19.2	17.93	70.50	0.00		94.8	70	123	51.90	91.65	47%	C	ASSUME OFF SUBDIV INTO 4, HOSP INTO 3, CONF INTO 2
621	MAIN DECK LEVEL (AFT)	4,882.8	254	19.2	18.60	41.25	0.00		55.8	45	65	33.15	48.15	54%	C	MULTIPURPOSE SPACE - ASSUME SUBDIV INTO 4
621	2ND DECK	8,668.9	452	19.2	15.08	112.13	0.50		150.3	77	209	57.15	155.40	56%	C	MESS ROOMS, GALLEY
621	3RD DECK (FWD)	7,771.5	405	19.2	12.23	112.13	0.00		150.3	123	176	91.65	131.40	52%	C	BERTHING
621	3ED DECK (AFT)	7,138.6	372	19.2	12.23	75.00	0.00		100.8	78	123	57.90	91.65	51%	C	ASSUME OFF SUBDIV INTO 4, LARGE CLASSROOM INTO 2
	HEAD SPACES WITHIN STATEROOMS ARE REQUIRED ONLY C-CLASS INSUL.															12.4 KG/M2 (20 MM)
621	CEILINGS															
621	05 LEVEL	1,961.3	183	10.7	33.30	125.00	0.00		167.47	155	174	115.65	129.90	66%	C	DANACOUSTIC M (8.7 KG/M2) + METAL SUPPORT (2 KG/M2)
621	04 LEVEL	20,186.6	1887	10.7	30.53	91.88	0.00		123.3	65	176	48.15	131.40	53%	C	NAV BRIDGE, CHART ROOM, ELEC EQPT ROOM
621	03 LEVEL	22,566.3	2109	10.7	27.60	91.88	0.00		123.3	70	176	51.90	131.40	50%	C	CABINS, PASS, COMM SUITE, NAV LAB, TRAINING BRDG
621	02 LEVEL	22,566.3	2109	10.7	24.80	91.88	0.00		123.3	70	176	51.90	131.40	50%	C	CABINS, PASS
621	01 LEVEL	18,119.4	1693	10.7	22.00	92.25	0.00		123.8	70	176	51.90	131.40	51%	C	CABINS, PASS
621	MAIN DECK	17,865.8	1670	10.7	19.10	93.25	0.00		125.13	70	176	51.90	131.40	52%	C	CABINS, PASS
621	2ND DECK	8,203.7	767	10.7	16.20	112.13	0.00		150.3	123	176	91.65	131.40	52%	C	MESS SPACES, GALLEY
621	3RD DECK	6,025.2	563	10.7	13.40	75.00	0.00		100.8	77	123	57.15	91.65	52%	C	CLASSROOMS, OFFICES, STUDY
622	FLOOR PLATES AND GRATINGS															
622	PLATE, DIAMOND, 3/16"															
622	ENGINE ROOM 1	29,558.4	278	85.1	3.00	60.20	0.00		81.067	70	90	51.90	66.90	55%	C	3/16" DIAMOND STEEL PLATE (42.5 KG/M2)
622	ENGINE ROOM 2	20,467.6	193	85.1	3.00	47.25	0.00		63.8	51	70	37.65	51.90	67%	C	ENGINE AREAS DEDUCTED + 25% FOR SUPPORTS
622	MOTOR ROOM 1	15,808.4	149	85.1	3.00	32.00	0.00		43.467	33	51	24.15	37.65	58%	C	ENGINE AREAS DEDUCTED + 25% FOR SUPPORTS
622	MOTOR ROOM 2	5,821.3	55	85.1	3.00	17.80	0.00		24.533	15	33	10.65	24.15	53%	C	MOTOR AND SHAFT AREAS DEDUCTED + 25% FOR SUPPORTS
622	AUX MACH ROOM 1	12,759.0	120	85.1	3.00	112.00	0.00		150.13	141	159	105.15	118.65	51%	C	MOTOR AND SHAFT AREAS DEDUCTED + 25% FOR SUPPORTS
622	AUX MACH ROOM 2	17,012.0	160	85.1	3.00	98.00	0.00		131.47	123	141	91.65	105.15	47%	C	
622	AUX MACH ROOM 3	17,012.0	160	85.1	3.00	85.00	0.00		114.13	108	123	80.40	91.65	41%	C	
622	AUX MACH ROOM 4	18,075.3	170	85.1	3.00	74.00	0.00		99.467	90	108	66.90	80.40	53%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL _v +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
635	03 LEVEL (FWD)	451.4	376	1.2	26.48	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	
635	03 LEVEL (AFT)	451.4	376	1.2	26.48	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	
635	02 LEVEL (FWD)	451.4	376	1.2	23.63	111.75	0.00		149.8	123	176	91.65	131.40	51%	C	
635	02 LEVEL (AFT)	451.4	376	1.2	23.63	72.38	0.00		97.3	70	123	51.90	91.65	52%	C	
635	01 LEVEL (FWD)	458.3	382	1.2	20.78	111.80	0.00		149.87	123	176	91.65	131.40	51%	C	
635	01 LEVEL (AFT)	374.5	312	1.2	20.78	72.40	0.00		97.333	70	123	51.90	91.65	52%	C	
635	MAIN DECK LEVEL (FWD)	454.9	379	1.2	17.93	112.50	0.00		150.8	123	176	91.65	131.40	52%	C	
635	MAIN DECK LEVEL (AFT)	456.9	381	1.2	17.93	72.40	0.00		97.333	70	123	51.90	91.65	52%	C	
635	MAIN DECK LEVEL (AFT)	355.0	296	1.2	18.60	41.25	0.00		55.8	45	65	33.15	48.15	54%	C	
635	INSULATION, DECKS	5,000.0	1	5,000.0	23.50	75.00	0.00		100.8	45	176	33.15	131.40	43%	E	ESTIMATE
635	INSULATION, HULL	5,000.0	1	5,000.0	15.00	90.00	0.00		120.8	58	176	42.90	131.40	53%	E	ESTIMATE
638	REFRIGERATED SPACES															
638	REFRIGERATED STORES															
638	Shelving	3,600.0	40	90.0	15.50	79.00	0.00	2ND DECK	106.13	96	114	71.40	84.90	56%	E	
638	Insulation	900.0	1	900.0	15.50	79.00	0.00	2ND DECK	106.13	96	114	71.40	84.90	56%	E	
638	Grating	3,037.4	271	11.2	15.50	79.00	0.00	2ND DECK	106.13	96	114	71.40	84.90	56%	E	
638	Misc. Equipment	1,884.4			15.50	79.00	0.00	2ND DECK	106.13	96	114	71.40	84.90	56%	E	ASSUMED 25% OF SPACE WEIGHT
641	OFFICER AND FACULTY BERTHING AND MESSING SPACES															
641	CAPTAIN LEVEL NIGHT BERTHING (03 LEVEL)															
641	Berth, Double	300.0	4	75.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	FOUR (4) COMPARTMENTS, FORWARD OF FR 158 P/S
641	Wardrobe, Double Door	720.0	8	90.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	
641	Table, Small	92.0	4	23.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	TWO (2) WARDROBES PER CABIN
641	Table, Large	120.0	4	30.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	
641	Entertainment Center	220.0	4	55.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	INCL. TV
641	Sofa	96.0	4	24.0	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	
641	Bedding	83.0	4	20.8	26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	INCLUDES MATTRESS, SHEETS, PILLOW, ETC. FOR 27 PERSONS (MAX.)
641	Misc. Items	244.7			26.40	126.75	0.00	03 LEVEL	169.8	163	176	121.65	131.40	52%	C	ASSUMED 15% OF SPACE WEIGHT
641	CAPTAIN LEVEL DAY CABINS (03 LEVEL)															
641	Sofa, Sectional	180.0	2	90.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	ONLY TWO (2) INCL., FORWARD CABINS FR 175 P/S
641	Desk, Executive	300.0	4	75.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	
641	Chair, Desk	68.0	4	17.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	
641	Chair, Lounge	336.0	14	24.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	THREE (3) IN FWD CABINS, FOUR (4) IN AFT CABINS
641	Table, Coffee	92.0	4	23.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	
641	Cabinets, File, Vertical	376.0	8	47.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	TWO (2) PER CABIN
641	Cabinets, Lateral	376.0	8	47.0	26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	TWO (2) PER CABIN
641	Misc. Items	259.2			26.35	124.90	0.00	03 LEVEL	167.33	157	176	117.15	131.40	54%	C	ASSUMED 15% OF SPACE WEIGHT
641	DISTINGUISHED VISITOR BERTHING (03 LEVEL)															
641	Berth, Double	300.0	4	75.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Wardrobe, Single Door	2,160.0	24	90.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Sofa, Sectional	360.0	4	90.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Desk	140.0	4	35.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Chair, Desk	68.0	4	17.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Chair, Lounge	96.0	4	24.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Table, Small	92.0	4	23.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Table, Large, Rounded	120.0	4	30.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	
641	Entertainment Center	220.0	4	55.0	26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	INCL. TV
641	Misc. Items	533.4			26.40	111.80	0.00	03 LEVEL	149.87	143	157	106.65	117.15	49%	C	ASSUMED 15% OF SPACE WEIGHT
641	OFFICER AND FACULTY BERTHING (03 LEVEL)															
641	Berth, Single	900.0	18	50.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Wardrobe, Double Door	1,620.0	18	90.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Sofa	1,620.0	18	90.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Desk	630.0	18	35.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Chair, Desk	306.0	18	17.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Chair, Lounge	432.0	18	24.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Table, Small	414.0	18	23.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Table, Large	540.0	18	30.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	
641	Entertainment Center	990.0	18	55.0	26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	INCL. TV
641	Misc. Items	1,117.8			26.40	99.00	0.00	03 LEVEL	132.8	123	143	91.65	106.65	49%	C	ASSUMED 15% OF SPACE WEIGHT
641	OFFICER AND FACULTY BERTHING (02 LEVEL)															
641	Berth, Two-Tier w/ Storage	3,230.0	34	95.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	
641	Berth, Single	150.0	3	50.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	THREE (3) CABINS ARE SINGLE OCCUPANCY
641	Wardrobe, Double Door	3,330.0	37	90.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	
641	Sofa	3,330.0	37	90.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	
641	Desk, Single Pedestal	1,295.0	37	35.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	
641	Chair, Desk	629.0	37	17.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	
641	Chair, Lounge	360.0	15	24.0	23.50	111.75	0.00	03 LEVEL	149.8	123	176	91.65	131.40	51%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/V/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL ₀ +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents		
644	Sink	320.0	32	10.0	26.35	73.13	0.00	03 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Mirror	128.0	32	4.0	26.35	73.13	0.00	03 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Shower	1,280.0	32	40.0	26.35	73.13	0.00	03 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Misc. Items	552.0			26.35	73.13	0.00	03 LEVEL	98.3	70	123	51.90	91.65	53%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 4 PERSON (02 LEVEL)															
644	Toilet	480.0	32	15.0	22.50	73.13	0.00	02 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Sink	320.0	32	10.0	22.50	73.13	0.00	02 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Mirror	128.0	32	4.0	22.50	73.13	0.00	02 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Shower	1,280.0	32	40.0	22.50	73.13	0.00	02 LEVEL	98.3	70	123	51.90	91.65	53%	C	
644	Misc. Items	552.0			22.50	73.13	0.00	02 LEVEL	98.3	70	123	51.90	91.65	53%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 36 PERSON (3RD DECK)															
644	Toilet	180.0	12	15.0	12.10	120.00	0.00	3RD DECK	160.8	159	163	118.65	121.65	45%	C	
644	Sink	80.0	8	10.0	12.10	120.00	0.00	3RD DECK	160.8	159	163	118.65	121.65	45%	C	
644	Mirror	32.0	8	4.0	12.10	120.00	0.00	3RD DECK	160.8	159	163	118.65	121.65	45%	C	
644	Shower	480.0	12	40.0	12.10	120.00	0.00	3RD DECK	160.8	159	163	118.65	121.65	45%	C	
644	Misc. Items	193.0			12.10	120.00	0.00	3RD DECK	160.8	159	163	118.65	121.65	45%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 33 PERSON (3RD DECK)															
644	Toilet	180.0	12	15.0	12.10	113.20	0.00	3RD DECK	151.73	150	154	111.90	114.90	43%	C	
644	Sink	80.0	8	10.0	12.10	113.20	0.00	3RD DECK	151.73	150	154	111.90	114.90	43%	C	
644	Mirror	32.0	8	4.0	12.10	113.20	0.00	3RD DECK	151.73	150	154	111.90	114.90	43%	C	
644	Shower	480.0	12	40.0	12.10	113.20	0.00	3RD DECK	151.73	150	154	111.90	114.90	43%	C	
644	Misc. Items	193.0			12.10	113.20	0.00	3RD DECK	151.73	150	154	111.90	114.90	43%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 21 PERSON (3RD DECK)															
644	Toilet	120.0	8	15.0	12.10	100.00	0.00	3RD DECK	134.13	132	136	98.40	101.40	53%	C	
644	Sink	80.0	8	10.0	12.10	100.00	0.00	3RD DECK	134.13	132	136	98.40	101.40	53%	C	
644	Mirror	32.0	8	4.0	12.10	100.00	0.00	3RD DECK	134.13	132	136	98.40	101.40	53%	C	
644	Shower	320.0	8	40.0	12.10	100.00	0.00	3RD DECK	134.13	132	136	98.40	101.40	53%	C	
644	Misc. Items	138.0			12.10	100.00	0.00	3RD DECK	134.13	132	136	98.40	101.40	53%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 18 PERSON (3RD DECK)															
644	Toilet	60.0	4	15.0	12.10	97.00	-8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Sink	40.0	4	10.0	12.10	97.00	-8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Mirror	16.0	4	4.0	12.10	97.00	-8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Shower	160.0	4	40.0	12.10	97.00	-8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Misc. Items	69.0			12.10	97.00	-8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CADET, 18 PERSON (3RD DECK)															
644	Toilet	60.0	4	15.0	12.10	97.00	8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Sink	40.0	4	10.0	12.10	97.00	8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Mirror	16.0	4	4.0	12.10	97.00	8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Shower	160.0	4	40.0	12.10	97.00	8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	
644	Misc. Items	69.0			12.10	97.00	8.50	3RD DECK	130.13	128	132	95.40	98.40	53%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, CHART ROOM															
644	Toilet	15.0	1	15.0	32.05	116.50	-2.60	05 LEVEL	156.13	155	157	115.65	117.15	57%	C	
644	Sink	10.0	1	10.0	32.05	116.50	-2.60	05 LEVEL	156.13	155	157	115.65	117.15	57%	C	
644	Mirror	4.0	1	4.0	32.05	116.50	-2.60	05 LEVEL	156.13	155	157	115.65	117.15	57%	C	
644	Misc. Items	7.3			32.05	116.50	-2.60	05 LEVEL	156.13	155	157	115.65	117.15	57%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, NAVIGATION LAB															
644	Toilet	30.0	2	15.0	29.20	115.50	0.00	04 LEVEL	154.8	153	157	114.15	117.15	45%	C	
644	Sink	20.0	2	10.0	29.20	115.50	0.00	04 LEVEL	154.8	153	157	114.15	117.15	45%	C	
644	Mirror	8.0	2	4.0	29.20	115.50	0.00	04 LEVEL	154.8	153	157	114.15	117.15	45%	C	
644	Misc. Items	14.5			29.20	115.50	0.00	04 LEVEL	154.8	153	157	114.15	117.15	45%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOM, COMMUNICATIONS SUITE															
644	Toilet	30.0	2	15.0	29.20	101.50	0.00	04 LEVEL	136.13	135	137	100.65	102.15	57%	C	
644	Sink	20.0	2	10.0	29.20	101.50	0.00	04 LEVEL	136.13	135	137	100.65	102.15	57%	C	
644	Mirror	8.0	2	4.0	29.20	101.50	0.00	04 LEVEL	136.13	135	137	100.65	102.15	57%	C	
644	Misc. Items	14.5			29.20	101.50	0.00	04 LEVEL	136.13	135	137	100.65	102.15	57%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOMS (MAIN DECK, FWD)															
644	Toilet	75.0	5	15.0	17.80	107.50	0.00	MAIN DECK	144.13	140	148	104.40	110.40	52%	C	
644	Partitions	120.0	6	20.0	17.80	107.50	0.00	MAIN DECK	144.13	140	148	104.40	110.40	52%	C	
644	Sink	40.0	4	10.0	17.80	107.50	0.00	MAIN DECK	144.13	140	148	104.40	110.40	52%	C	
644	Mirror	16.0	4	4.0	17.80	107.50	0.00	MAIN DECK	144.13	140	148	104.40	110.40	52%	C	
644	Misc. Items	62.8			17.80	107.50	0.00	MAIN DECK	144.13	140	148	104.40	110.40	52%	C	ASSUMED 25% OF TOTAL WEIGHT
644	WASHROOMS (MAIN DECK, AFT)															
644	Toilet	60.0	4	15.0	17.80	79.25	0.00	MAIN DECK	106.47	104	109	77.40	81.15	49%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL±Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
644	Partitions	40.0	2	20.0	17.80	79.25	0.00	MAIN DECK	106.47	104	109	77.40	81.15	49%	C	ASSUMED 25% OF TOTAL WEIGHT
644	Sink	40.0	4	10.0	17.80	79.25	0.00	MAIN DECK	106.47	104	109	77.40	81.15	49%	C	
644	Mirror	16.0	4	4.0	17.80	79.25	0.00	MAIN DECK	106.47	104	109	77.40	81.15	49%	C	
644	Misc. Items	39.0			17.80	79.25	0.00	MAIN DECK	106.47	104	109	77.40	81.15	49%	C	
644	WASHROOMS (2ND DECK)															
644	Toilet	90.0	6	15.0	14.95	85.13	6.38	4TH DECK	114.3	110	118	81.90	87.90	54%	C	ASSUMED 25% OF TOTAL WEIGHT
644	Partitions	120.0	6	20.0	14.95	85.13	6.38	4TH DECK	114.3	110	118	81.90	87.90	54%	C	
644	Sink	40.0	4	10.0	14.95	85.13	6.38	4TH DECK	114.3	110	118	81.90	87.90	54%	C	
644	Mirror	16.0	4	4.0	14.95	85.13	6.38	4TH DECK	114.3	110	118	81.90	87.90	54%	C	
644	Misc. Items	66.5			14.95	85.13	6.38	4TH DECK	114.3	110	118	81.90	87.90	54%	C	
644	WASHROOMS (3RD DECK)															
644	Toilet	105.0	7	15.0	12.10	87.90	4.20	4TH DECK	118	112	123	83.40	91.65	55%	C	ASSUMED 25% OF TOTAL WEIGHT
644	Partitions	140.0	7	20.0	12.10	87.90	4.20	4TH DECK	118	112	123	83.40	91.65	55%	C	
644	Sink	70.0	7	10.0	12.10	87.90	4.20	4TH DECK	118	112	123	83.40	91.65	55%	C	
644	Mirror	28.0	7	4.0	12.10	87.90	4.20	4TH DECK	118	112	123	83.40	91.65	55%	C	
644	Misc. Items	85.8			12.10	87.90	4.20	4TH DECK	118	112	123	83.40	91.65	55%	C	
644	WASHROOMS (4TH DECK)															
644	Toilet	180.0	12	15.0	9.10	104.40	-3.69	4TH DECK	140	110	163	81.90	121.65	57%	C	THREE (3) SEPARATE COMPARTMENTS, FR 110 - 159
644	Partitions	220.0	11	20.0	9.10	104.40	-3.69	4TH DECK	140	110	163	81.90	121.65	57%	C	
644	Sink	120.0	12	10.0	9.10	104.40	-3.69	4TH DECK	140	110	163	81.90	121.65	57%	C	
644	Mirror	48.0	12	4.0	9.10	104.40	-3.69	4TH DECK	140	110	163	81.90	121.65	57%	C	
644	Misc. Items	142.0			9.10	104.40	-3.69	4TH DECK	140	110	163	81.90	121.65	57%	C	ASSUMED 25% OF TOTAL WEIGHT
645	LEISURE AND COMMUNITY SPACES															
645	GYM															
645	Trainer, Multi	135.0	1	135.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	ASSUMED 25% OF TOTAL WEIGHT
645	Cycle, Exercise	89.0	2	44.5	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Treadmill	148.0	1	148.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Dumbbells, Set	132.0	1	132.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Bar, Olympic	96.0	1	96.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Machine, Ab Crunch	100.0	1	100.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Machine, Twister	16.0	1	16.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Bull Worker	25.0	1	25.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Machine, Rowing	84.0	2	42.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Trimmer, Tummy	18.0	1	18.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Mirror, Full Length	21.0	1	21.0	9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	Misc. Furnishings	216.0			9.60	125.63	-3.80	4TH DECK	168.3	159	176	118.65	131.40	55%	C	
645	OFFICER LOUNGE															
645	Sofa	135.0	3	45.0	17.80	98.25	-8.50	MAIN DECK	131.8	123	139	91.65	103.65	55%	C	ASSUMED 30% OF TOTAL WEIGHT
645	Chair, Lounge	80.0	8	10.0	17.80	98.25	-8.50	MAIN DECK	131.8	123	139	91.65	103.65	55%	C	
645	Table	60.0	4	15.0	17.80	98.25	-8.50	MAIN DECK	131.8	123	139	91.65	103.65	55%	C	
645	TV	20.0	2	10.0	17.80	98.25	-8.50	MAIN DECK	131.8	123	139	91.65	103.65	55%	C	
645	Misc. Furnishings	88.5			17.80	98.25	-8.50	MAIN DECK	131.8	123	139	91.65	103.65	55%	C	
645	SHIPS STORE & CAFÉ															
645	Tables	80.0	4	20.0	18.30	84.38	-6.43	MAIN DECK	113.3	102	123	75.90	91.65	54%	C	ALL FURNISHINGS HAVE BEEN ASSUMED QTY AND WEIGHT
645	Stools	140.0	20	7.0	18.30	84.38	-6.43	MAIN DECK	113.3	102	123	75.90	91.65	54%	C	
645	Rack, Display	200.0	4	50.0	18.30	84.38	-6.43	MAIN DECK	113.3	102	123	75.90	91.65	54%	C	
645	Counter	72.0	3	24.0	18.30	84.38	-6.43	MAIN DECK	113.3	102	123	75.90	91.65	54%	C	
645	TV	40.0	4	10.0	18.30	84.38	-6.43	MAIN DECK	113.3	102	123	75.90	91.65	54%	C	
645	Misc. Furnishings	266.0		18.5	18.30	85.38	-6.43	MAIN DECK	114.63	102	123	75.90	91.65	60%	C	
645	STUDY LOUNGE															
645	Countertop	100.0	2	50.0	12.10	117.00	-7.97	3RD DECK	156.8	154	159	114.90	118.65	56%	C	ASSUMED 30% OF TOTAL WEIGHT
645	Chair	180.0	18	10.0	12.10	117.00	-7.97	3RD DECK	156.8	154	159	114.90	118.65	56%	C	
645	Table, Computer	40.0	2	20.0	12.10	117.00	-7.97	3RD DECK	156.8	154	159	114.90	118.65	56%	C	
645	Misc. Furnishings	96.0			12.10	117.00	-7.97	3RD DECK	156.8	154	159	114.90	118.65	56%	C	
645	STUDY															
645	Countertop	100.0	2	50.0	12.10	62.63	6.00	3RD DECK	84.3	77	90	57.15	66.90	56%	C	ASSUMED 30% OF TOTAL WEIGHT
645	Chair	180.0	18	10.0	12.10	62.63	6.00	3RD DECK	84.3	77	90	57.15	66.90	56%	C	
645	Table, Computer	40.0	2	20.0	12.10	62.63	6.00	3RD DECK	84.3	77	90	57.15	66.90	56%	C	
645	Misc. Furnishings	96.0			12.10	62.63	6.00	3RD DECK	84.3	77	90	57.15	66.90	56%	C	
645	LOUNGE, CADET, UPPER CLASS (04 LEVEL)															
645	Sofa	135.0	3	45.0	29.20	68.50	1.00	04 LEVEL	92.133	85	99	63.15	73.65	51%	C	ASSUMED 30% OF TOTAL WEIGHT
645	Chair, Lounge	80.0	8	10.0	29.20	68.50	1.00	04 LEVEL	92.133	85	99	63.15	73.65	51%	C	
645	Table	60.0	4	15.0	29.20	68.50	1.00	04 LEVEL	92.133	85	99	63.15	73.65	51%	C	
645	TV	20.0	2	10.0	29.20	68.50	1.00	04 LEVEL	92.133	85	99	63.15	73.65	51%	C	
645	Misc. Furnishings	64.5			29.20	68.50	1.00	04 LEVEL	92.133	85	99	63.15	73.65	51%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL _s +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents			
652	Dresser, Steel, Stainless	100.0	1	100.0	17.80	58.13	5.82	MAIN DECK	78.3	70	87	51.90	64.65	49%	C	ASSUMED 50% OF TOTAL WEIGHT	
652	Bedding	83.2	4	20.8	17.80	58.13	5.82	MAIN DECK	78.3	70	87	51.90	64.65	49%	C		
652	Misc. Furnishings	428.1			17.80	58.13	5.82	MAIN DECK	78.3	70	87	51.90	64.65	49%	C		
652	EXAMINATION ROOMS (3 ROOMS)																
652	Table, Examination	300.0	3	100.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C	ASSUMED 25% OF TOTAL WEIGHT	
652	Couch, Examination	225.0	3	75.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Table, Operation, Portable	118.5	3	39.5	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Light, Operation, UV, OH-Mounted	45.0	3	15.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Table	105.0	3	35.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Curtain, Privacy	36.0	3	12.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Computer and Monitor	30.0	3	10.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Dresser, Steel, Stainless	300.0	3	100.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Cupboard, Steel, Stainless	225.0	3	75.0	17.83	69.00	4.54	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Misc. Furnishings	346.1			17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	WAITING ROOM																
652	Desk	20.0	1	20.0	17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		ASSUMED 30% OF TOTAL WEIGHT
652	Chair, Desk	7.0	1	7.0	17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Chair, Individual	70.0	10	7.0	17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	TV	10.0	1	10.0	17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	Misc. Furnishings	32.1			17.80	69.00	4.50	MAIN DECK	92.8	87	97	64.65	72.15	58%	C		
652	ALT MEDICAL CARE																
652	Table	35.0	1	35.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C	ASSUMED 25% OF TOTAL WEIGHT	
652	Chair, Side	17.0	1	17.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Cupboard, Steel, Stainless	75.0	1	75.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Sink, Deep, with Flexible Faucet	15.0	1	15.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Dresser, Steel, Stainless	100.0	1	100.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Light, Operation, UV, OH-Mounted	15.0	1	15.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Curtain, Privacy	12.0	1	12.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Table	35.0	1	35.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Stretcher	7.0	1	7.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Stretcher, Airborne	5.0	1	5.0	17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
652	Misc. Furnishings	79.0			17.80	115.00	-7.55	MAIN DECK	154.13	149	159	111.15	118.65	51%	C		
654	UTILITY SPACES																
654	Barber Shop															ASSUMED 25% OF TOTAL WEIGHT	
654	Chair, Side	36.0	3	12.0	18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	Counter, Sink, with Drawers	20.0	2	10.0	18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	Faucet, Gooseneck	10.0	2	5.0	18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	Mirror	30.0	2	15.0	18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	Chair, Barber	86.0	2	43.0	18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	Misc. Furnishings	45.5			18.15	108.00	-7.70		144.8	139	149	103.65	111.15	58%	C		
654	MULTI-PURPOSE SPACE																
654	Chairs, Folding, Portable	1,250.0	250	5.0	17.55	41.25	0.00		55.8	45	65	33.15	48.15	54%	C		
654	Tables	350.0	10	35.0	17.55	41.25	0.00		55.8	45	65	33.15	48.15	54%	C		
654	Misc. Furnishings	480.0			17.55	41.25	0.00		55.8	45	65	33.15	48.15	54%	C		
655	LAUNDRY SPACES																
655	LAUNDRY, CADET (04 LEVEL)																
655	Machine, Washer/Dryer, Combination	2,758.0	14	197.0	29.70	81.00	2.50	04 LEVEL	108.8	103	113	76.65	84.15	58%	C	ASSUME 10% FOR ADDITIONAL EQPT.	
655	Cabinet, Soap/Linen	35.0	1	35.0	29.70	81.00	2.50	04 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Sink, Stainless Steel	15.0	1	15.0	29.70	81.00	2.50	04 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Iron, Handheld	3.0	1	3.0	29.70	81.00	2.50	04 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Misc. Equipment	702.8			29.70	81.00	2.50	04 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	LAUNDRY, CADET (03 LEVEL)																
655	Machine, Washer/Dryer, Combination	2,758.0	14	197.0	26.85	81.00	2.50	03 LEVEL	108.8	103	113	76.65	84.15	58%	C	ASSUME 10% FOR ADDITIONAL EQPT.	
655	Cabinet, Soap/Linen	35.0	1	35.0	26.85	81.00	2.50	03 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Sink, Stainless Steel	15.0	1	15.0	26.85	81.00	2.50	03 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Iron, Handheld	3.0	1	3.0	26.85	81.00	2.50	03 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	Misc. Equipment	281.1			26.85	81.00	2.50	03 LEVEL	108.8	103	113	76.65	84.15	58%	C		
655	LAUNDRY, OFFICER (03 LEVEL)																
655	Machine, Washer/Dryer, Combination	1,182.0	6	197.0	26.85	113.00	0.00	03 LEVEL	151.47	148	155	110.40	115.65	50%	C	ASSUME 10% FOR ADDITIONAL EQPT.	
655	Cabinet, Soap/Linen	35.0	1	35.0	26.85	113.00	0.00	03 LEVEL	151.47	148	155	110.40	115.65	50%	C		
655	Sink, Stainless Steel	15.0	1	15.0	26.85	113.00	0.00	03 LEVEL	151.47	148	155	110.40	115.65	50%	C		
655	Iron, Handheld	3.0	1	3.0	26.85	113.00	0.00	03 LEVEL	151.47	148	155	110.40	115.65	50%	C		
655	Misc. Equipment	123.5			26.85	113.00	0.00	03 LEVEL	151.47	148	155	110.40	115.65	50%	C		
655	LAUNDRY, CADET (02 LEVEL)																
655	Machine, Washer/Dryer, Combination	2,758.0	14	197.0	24.00	81.00	2.50	02 LEVEL	108.8	103	113	76.65	84.15	58%	C		

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS					E/C/V/etc	COMMENTS	
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL _c +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]			Loc. w/in Extents
655	Cabinet, Soap/Linen	35.0	1	35.0	24.00	81.00	2.50	02 LEVEL	108.8	103	113	76.65	84.15	58%	C	
655	Sink, Stainless Steel	15.0	1	15.0	24.00	81.00	2.50	02 LEVEL	108.8	103	113	76.65	84.15	58%	C	
655	Iron, Handheld	3.0	1	3.0	24.00	81.00	2.50	02 LEVEL	108.8	103	113	76.65	84.15	58%	C	
655	Misc. Equipment	281.1			24.00	81.00	2.50	02 LEVEL	108.8	103	113	76.65	84.15	58%	C	ASSUME 10% FOR ADDITIONAL EQPT.
655	LAUNDRY, OFFICER (02 LEVEL)															
655	Machine, Washer/Dryer, Combination	1,182.0	6	197.0	24.00	113.00	0.00	02 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Cabinet, Soap/Linen	35.0	1	35.0	24.00	113.00	0.00	02 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Sink, Stainless Steel	15.0	1	15.0	24.00	113.00	0.00	02 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Iron, Handheld	3.0	1	3.0	24.00	113.00	0.00	02 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Misc. Equipment	123.5			24.00	113.00	0.00	02 LEVEL	151.47	148	155	110.40	115.65	50%	C	ASSUME 10% FOR ADDITIONAL EQPT.
655	LAUNDRY, CREW (01 LEVEL)															
655	Machine, Washer/Dryer, Combination	985.0	5	197.0	21.15	83.00	0.00	01 LEVEL	111.47	109	114	81.15	84.90	49%	C	
655	Cabinet, Soap/Linen	35.0	1	35.0	21.15	83.00	0.00	01 LEVEL	111.47	109	114	81.15	84.90	49%	C	
655	Sink, Stainless Steel	15.0	1	15.0	21.15	83.00	0.00	01 LEVEL	111.47	109	114	81.15	84.90	49%	C	
655	Iron, Handheld	3.0	1	3.0	21.15	83.00	0.00	01 LEVEL	111.47	109	114	81.15	84.90	49%	C	
655	Misc. Equipment	103.8			21.15	83.00	0.00	01 LEVEL	111.47	109	114	81.15	84.90	49%	C	ASSUME 10% FOR ADDITIONAL EQPT.
655	LAUNDRY, CREW (01 LEVEL)															
655	Machine, Washer/Dryer, Combination	1,182.0	6	197.0	21.15	113.00	0.00	01 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Cabinet, Soap/Linen	35.0	1	35.0	21.15	113.00	0.00	01 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Sink, Stainless Steel	15.0	1	15.0	21.15	113.00	0.00	01 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Iron, Handheld	3.0	1	3.0	21.15	113.00	0.00	01 LEVEL	151.47	148	155	110.40	115.65	50%	C	
655	Misc. Equipment	123.5			21.15	113.00	0.00	01 LEVEL	151.47	148	155	110.40	115.65	50%	C	ASSUME 10% FOR ADDITIONAL EQPT.
655	LAUNDRY, CREW (3RD DECK)															
655	Machine, Washer/Dryer, Combination	4,137.0	21	197.0	12.70	116.80	7.80	3RD DECK	156.53	154	159	114.90	118.65	51%	C	
655	Cabinet, Soap/Linen	35.0	1	35.0	12.70	116.80	7.80	3RD DECK	156.53	154	159	114.90	118.65	51%	C	
655	Sink, Stainless Steel	15.0	1	15.0	12.70	116.80	7.80	3RD DECK	156.53	154	159	114.90	118.65	51%	C	
655	Iron, Handheld	3.0	1	3.0	12.70	116.80	7.80	3RD DECK	156.53	154	159	114.90	118.65	51%	C	
655	Misc. Equipment	419.0			12.70	116.80	7.80	3RD DECK	156.53	154	159	114.90	118.65	51%	C	ASSUME 10% FOR ADDITIONAL EQPT.
656	TRASH DISPOSAL SPACES															
656	GARBAGE ROOM (2ND DECK)															
656	Compactor	550.0	1	550.0	15.45	47.60	3.20	2ND DECK	64.267	60	70	44.40	51.90	43%	C	
656	Hoses	150.0	3	50.0	15.45	47.60	3.20	2ND DECK	64.267	60	70	44.40	51.90	43%	C	
656	Misc. Equipment	350.0			15.45	47.60	3.20	2ND DECK	64.267	60	70	44.40	51.90	43%	C	ASSUME 50% FOR ADDITIONAL EQPT.
656	GARBAGE ROOM (3RD DECK)															
656	Compactor	550.0	1	550.0	12.60	47.60	3.20	3RD DECK	64.267	60	70	44.40	51.90	43%	C	
656	Hoses	150.0	3	50.0	12.60	47.60	3.20	3RD DECK	64.267	60	70	44.40	51.90	43%	E	
656	Misc. Equipment	350.0			12.60	47.60	3.20	3RD DECK	64.267	60	70	44.40	51.90	43%	E	ASSUME 50% FOR ADDITIONAL EQPT.
656	INCINERATOR															
656	Fan, Flue Gas	800.0	1	800.0	12.40	46.50	-3.78	2ND/3RD DECK	62.8	60	65	44.40	48.15	56%	V	
656	Chamber, Combustion	4,950.0	1	4,950.0	12.40	46.50	-3.78	2ND/3RD DECK	62.8	60	65	44.40	48.15	56%	V	
656	Tank, Fuel, Diesel (1 m3 capacity)	250.0	1	250.0	12.40	46.50	-3.78	2ND/3RD DECK	62.8	60	65	44.40	48.15	56%	C	
656	Misc. Equipment	1,200.0			12.40	46.50	-3.78	2ND/3RD DECK	62.8	60	65	44.40	48.15	56%	C	ASSUME 20% FOR ADDITIONAL EQPT.
661	OFFICES AND CLASSROOMS															
661	EXECUTIVE CONFERENCE ROOM															
661	Table, Conference	100.0	1	100.0	26.35	128.25	1.88	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Chair, Executive	205.0	10	20.5	26.35	128.25	1.88	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Entertainment/Communication Center	55.0	1	55.0	26.40	128.25	1.88	01 LEVEL	171.8	167	176	124.65	131.40	53%	C	INCL. TV
661	Misc. Furnishings	54.0			26.35	128.25	1.88	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
661	OFFICE, EXECUTIVE															
661	**INCL. UNDER SWBS 641 (4 OFFICES)															
661	OFFICE (03 LEVEL, FR 167)															
661	Cabinets, File, Vertical	752.0	16	47.0	26.35	128.25	-3.37	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Desk	70.0	2	35.0	26.35	128.25	-3.37	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Chair, Desk	34.0	2	17.0	26.35	128.25	-3.37	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Table, Large	30.0	1	30.0	26.35	128.25	-3.37	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	
661	Misc. Furnishings	88.6			26.35	128.25	-3.37	03 LEVEL	171.8	167	176	124.65	131.40	53%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	OFFICE (MAIN DECK, FR 167, PORT)															
661	Cabinets, File, Vertical	376.0	8	47.0	17.80	128.25	-7.55	MAIN DECK	171.8	167	176	124.65	131.40	53%	C	ASSUME 4 OFFICES, 2 FILE CABS PER OFFICE
661	Desk	140.0	4	35.0	17.80	128.25	-7.55	MAIN DECK	171.8	167	176	124.65	131.40	53%	C	
661	Chair, Desk	68.0	4	17.0	17.80	128.25	-7.55	MAIN DECK	171.8	167	176	124.65	131.40	53%	C	
661	Table, Small	80.0	4	20.0	17.80	128.25	-7.55	MAIN DECK	171.8	167	176	124.65	131.40	53%	C	
661	Misc. Furnishings	66.4			17.80	128.25	-7.55	MAIN DECK	171.8	167	176	124.65	131.40	53%	C	ASSUME 10% FOR ADDITIONAL FURNISH.

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/V/etc	COMMENTS
					VCg [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL,+Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents		
661	OFFICE (MAIN DECK, FR 159, PORT)															
661	Cabinets, File, Vertical	376.0	8	47.0	17.80	122.20	-7.55	MAIN DECK	163.73	160	167	119.40	124.65	53%	C	ASSUME 4 OFFICES, 2 FILE CABS PER OFFICE
661	Desk	140.0	4	35.0	17.80	122.20	-7.55	MAIN DECK	163.73	160	167	119.40	124.65	53%	C	
661	Chair, Desk	68.0	4	17.0	17.80	122.20	-7.55	MAIN DECK	163.73	160	167	119.40	124.65	53%	C	
661	Table, Small	80.0	4	20.0	17.80	122.20	-7.55	MAIN DECK	163.73	160	167	119.40	124.65	53%	C	
661	Misc. Furnishings	66.4			17.80	122.20	-7.55	MAIN DECK	163.73	160	167	119.40	124.65	53%	C	
661	OFFICE, MEDICAL (MAIN DECK, FR 111, STBD)															
661	Cabinets, File, Vertical	376.0	8	47.0	17.80	87.75	6.54	MAIN DECK	117.8	112	123	83.40	91.65	53%	C	ASSUME 4 OFFICES, 2 FILE CABS PER OFFICE
661	Desk	140.0	4	35.0	17.80	87.75	6.54	MAIN DECK	117.8	112	123	83.40	91.65	53%	C	
661	Chair, Desk	68.0	4	17.0	17.80	87.75	6.54	MAIN DECK	117.8	112	123	83.40	91.65	53%	C	
661	Table, Small	80.0	4	20.0	17.80	87.75	6.54	MAIN DECK	117.8	112	123	83.40	91.65	53%	C	
661	Misc. Furnishings	66.4			17.80	87.75	6.54	MAIN DECK	117.8	112	123	83.40	91.65	53%	C	
661	OFFICE, MEDICAL (MAIN DECK, FR 102, STBD)															
661	Cabinets, File, Vertical	376.0	8	47.0	17.80	80.25	6.54	MAIN DECK	107.8	102	112	75.90	83.40	58%	C	ASSUME 4 OFFICES, 2 FILE CABS PER OFFICE
661	Desk	140.0	4	35.0	17.80	80.25	6.54	MAIN DECK	107.8	102	112	75.90	83.40	58%	C	
661	Chair, Desk	68.0	4	17.0	17.80	80.25	6.54	MAIN DECK	107.8	102	112	75.90	83.40	58%	C	
661	Table, Small	80.0	4	20.0	17.80	80.25	6.54	MAIN DECK	107.8	102	112	75.90	83.40	58%	C	
661	Misc. Furnishings	66.4			17.80	80.25	6.54	MAIN DECK	107.8	102	112	75.90	83.40	58%	C	
661	CLASSROOM, 45 PERSON (MAIN DECK, FR 162, STBD)															
661	Cabinets, File, Vertical	47.0	1	47.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	500.0	5	100.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	Desk, Instructor	35.0	1	35.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	Chair, Desk	17.0	1	17.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	Table, Small	20.0	1	20.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	Lecturn, Instructional	12.0	1	12.0	17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	Misc. Furnishings	63.1			17.80	126.75	7.50	MAIN DECK	169.8	162	176	120.90	131.40	56%	C	
661	CLASSROOM, 60 PERSON (MAIN DECK, FR 154, STBD)															
661	Cabinets, File, Vertical	94.0	2	47.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	600.0	6	100.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	Desk, Instructor	35.0	1	35.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	Chair, Desk	17.0	1	17.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	Table, Small	40.0	2	20.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	Lecturn, Instructional	12.0	1	12.0	17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	Misc. Furnishings	79.8			17.80	114.75	7.50	MAIN DECK	153.8	145	162	108.15	120.90	52%	C	
661	CLASSROOM, 30 PERSON (3RD DECK, FR 115, PORT)															
661	Cabinets, File, Vertical	47.0	1	47.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	300.0	3	100.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	Desk, Instructor	35.0	1	35.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	Chair, Desk	17.0	1	17.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	Table, Small	20.0	1	20.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	Lecturn, Instructional	12.0	1	12.0	12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	Misc. Furnishings	43.1			12.10	89.25	-8.50	3RD DECK	119.8	116	123	86.40	91.65	54%	C	
661	CLASSROOM, 30 PERSON (3RD DECK, FR 108, PORT)															
661	Cabinets, File, Vertical	47.0	1	47.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	300.0	3	100.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	Desk, Instructor	35.0	1	35.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	Chair, Desk	17.0	1	17.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	Table, Small	20.0	1	20.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	Lecturn, Instructional	12.0	1	12.0	12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	Misc. Furnishings	43.1			12.10	84.00	-8.50	3RD DECK	112.8	109	116	81.15	86.40	54%	C	
661	CLASSROOM, 60 PERSON (3RD DECK, FR 90, PORT)															
661	Cabinets, File, Vertical	94.0	2	47.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	600.0	6	100.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	Desk, Instructor	35.0	1	35.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	Chair, Desk	17.0	1	17.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	Table, Small	40.0	2	20.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	Lecturn, Instructional	12.0	1	12.0	12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	Misc. Furnishings	79.8			12.10	74.25	-8.40	3RD DECK	99.8	90	109	66.90	81.15	52%	C	
661	CLASSROOM, 45 PERSON (3RD DECK, FR 77, PORT)															
661	Cabinets, File, Vertical	47.0	1	47.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	Desk, Elongated w/ Bench	500.0	5	100.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	
661	Desk, Instructor	35.0	1	35.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	
661	Chair, Desk	17.0	1	17.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	
661	Table, Small	20.0	1	20.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/V/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL ₀ +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents		
661	Lecturn, Instructional	12.0	1	12.0	12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	
661	Misc. Furnishings	63.1			12.10	62.63	-8.40	3RD DECK	84.3	78	90	57.90	66.90	53%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	CLASSROOM, 30 PERSON (3RD DECK, FR 99, STBD)															
661	Cabinets, File, Vertical	47.0	1	47.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Desk, Elongated w/ Bench	300.0	3	100.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Deck, Instructor	35.0	1	35.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Chair, Desk	17.0	1	17.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Table, Small	20.0	1	20.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Lecturn, Instructional	12.0	1	12.0	12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	
661	Misc. Furnishings	43.1			12.10	77.00	8.30	3RD DECK	103.47	100	107	74.40	79.65	50%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	CLASSROOM, 30 PERSON (3RD DECK, FR 90, STBD)															
661	Cabinets, File, Vertical	47.0	1	47.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Desk, Elongated w/ Bench	300.0	3	100.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Deck, Instructor	35.0	1	35.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Chair, Desk	17.0	1	17.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Table, Small	20.0	1	20.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Lecturn, Instructional	12.0	1	12.0	12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	
661	Misc. Furnishings	43.1			12.10	70.88	8.30	3RD DECK	95.3	90	100	66.90	74.40	53%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	OFFICE, FALCULTY (3RD DECK, FR 108, STBD)															
661	Cabinets, File, Vertical	564.0	12	47.0	12.10	86.63	8.30	3RD DECK	116.3	108	123	80.40	91.65	55%	C	ASSUME 6 OFFICES, 2 FILE CABS PER OFFICE
661	Desk	210.0	6	35.0	12.10	86.63	8.30	3RD DECK	116.3	108	123	80.40	91.65	55%	C	
661	Chair, Desk	102.0	6	17.0	12.10	86.63	8.30	3RD DECK	116.3	108	123	80.40	91.65	55%	C	
661	Table, Small	120.0	6	20.0	12.10	86.63	8.30	3RD DECK	116.3	108	123	80.40	91.65	55%	C	
661	Misc. Furnishings	99.6			12.10	86.63	8.30	3RD DECK	116.3	108	123	80.40	91.65	55%	C	ASSUME 10% FOR ADDITIONAL FURNISH.
661	CONFERENCE															
661	Table, Conference, Large	200.0	1	200.0	17.80	70.13	-6.43	MAIN DECK	94.3	85	102	63.15	75.90	55%	C	
661	Chair, Executive	340.0	20	17.0	17.80	70.13	-6.43	MAIN DECK	94.3	85	102	63.15	75.90	55%	C	
661	Chair, Individual	200.0	20	10.0	17.80	70.13	-6.43	MAIN DECK	94.3	85	102	63.15	75.90	55%	C	
661	Entertainment/Communication Center	110.0	2	55.0	17.80	70.13	-6.43	MAIN DECK	94.3	85	102	63.15	75.90	55%	C	INCL. TV
661	Misc. Furnishings	127.5			17.80	70.13	-6.43	MAIN DECK	94.3	85	102	63.15	75.90	55%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
662	MACHINERY CONTROL CENTERS FURNISHINGS															
662	CONTROL ROOM 1															
662	Cabinets, File, Vertical	94.0	2	47.0	8.35	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Desk	35.0	1	35.0	8.00	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Chair, Desk	17.0	1	17.0	8.00	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Table, Small	20.0	1	20.0	8.30	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Computer and Monitor	10.0	1	10.0	8.30	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Chair	60.0	6	10.0	8.00	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Cabinets, Lateral	47.0	1	47.0	8.30	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	
662	Misc. Furnishings	42.5			8.30	63.00	10.10	4TH DECK	84.8	78	90	57.90	66.90	57%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
662	CONTROL ROOM 2															
662	Cabinets, File, Vertical	94.0	2	47.0	8.35	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Desk	35.0	1	35.0	8.00	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Chair, Desk	17.0	1	17.0	8.00	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Table, Small	20.0	1	20.0	8.30	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Computer and Monitor	10.0	1	10.0	8.30	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Chair	60.0	6	10.0	8.00	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Cabinets, Lateral	47.0	1	47.0	8.30	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	
662	Misc. Furnishings	42.5			8.30	42.00	-10.10	4TH DECK	56.8	51	62	37.65	45.90	53%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
663	ELECTRONICS CONTROL CENTERS FURNISHINGS															
663	COMMUNICATIONS SUITE															
663	Cabinets, File, Vertical	47.0	1	47.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Chair, Desk	85.0	5	17.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Table, Small	40.0	2	20.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Computer and Monitor	10.0	1	10.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Chair	60.0	6	10.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Cabinets, Lateral	47.0	1	47.0	29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	
663	Misc. Furnishings	43.4			29.20	100.50	0.00	04 LEVEL	134.8	123	141	91.65	105.15	66%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
665	WORKSHOPS, LABS, TEST AREAS (INCL PORTABLE TOOLS, EQUIP)															
665	TRAINING BRIDGE															
665	Cabinets, File, Vertical	94.0	2	47.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Desk	35.0	1	35.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Chair, Desk	17.0	1	17.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Table, Small	20.0	1	20.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Computer and Monitor	10.0	1	10.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Chair	60.0	6	10.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Cabinets, Lateral	47.0	1	47.0	29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	
665	Misc. Furnishings	42.5			29.20	127.50	0.00	04 LEVEL	170.8	165	176	123.15	131.40	53%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
665	NAVIGATION LAB															
665	Cabinets, File, Vertical	47.0	1	47.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Desk	100.0	5	20.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Chair, Desk	85.0	5	17.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	

WEIGHT GROUP	DESCRIPTION	TOTAL WT. [kg]	QUANTITY [units]	UNIT WT. [kg/unit]	CENTER OF GRAVITY			LOCATION	EXTENTS						E/C/N/etc	COMMENTS
					VCG [m-Abv-BL]	LCG [m-Fwd-AP]	TCG [m-CL _y +Stbd]		LCG [FR]	Aft [FR]	Fwd [FR]	Aft [m-Fwd-AP]	Fwd [m-Fwd-AP]	Loc. w/in Extents		
665	Table, Small	100.0	5	20.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Computer and Monitor	10.0	1	10.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Chair	60.0	6	10.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Cabinets, Lateral	47.0	1	47.0	29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	
665	Misc. Furnishings	67.4			29.20	113.00	0.00	04 LEVEL	151.47	141	165	105.15	123.15	44%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
665	LABS (4)															
665	Cabinets, File, Vertical	376.0	8	47.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 2 PER LAB
665	Desk, Elongated	2,400.0	24	100.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 6 PER LAB
665	Table, Small	320.0	16	20.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 4 PER LAB
665	Computer and Monitor	80.0	8	10.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 2 PER LAB
665	Chair	800.0	80	10.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 20 PER LAB
665	Cabinets, Lateral	376.0	8	47.0	9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 2 PER LAB
665	Misc. Furnishings	2,611.2			9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
665	Teaching Equipment	4,352.0			9.10	108.50	0.00	4TH DECK	145.47	129	176	96.15	131.40	35%	C	ASSUME 25% FOR HEAVY EQUIPMENT
665	WORKSHOPS (4)															
665	Cabinets, File, Vertical	376.0	8	47.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 2 PER WORKSHOP
665	Workbench, Steel	1,600.0	16	100.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 4 PER WORKSHOP
665	Table, Small	320.0	16	20.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 4 PER WORKSHOP
665	Computer and Monitor	80.0	8	10.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 2 PER WORKSHOP
665	Chair	400.0	40	10.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 10 PER WORKSHOP
665	Cabinets, Lateral	376.0	8	47.0	9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 2 PER WORKSHOP
665	Misc. Furnishings	1,891.2			9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 15% FOR ADDITIONAL FURNISH.
665	Workshop Equipment	3,152.0			9.10	81.40	0.00	4TH DECK	109.33	95	123	70.65	91.65	51%	C	ASSUME 25% FOR HEAVY EQUIPMENT
671	LOCKERS AND SPECIAL STOWAGE															
671	DECK TRAINING															
671	Workbench, Wood	300.0	4	75.0	14.95	138.50	0.00	2ND DECK	185.47	176	194	131.40	144.90	53%	C	ASSUME 4 BENCHES
671	Shelving	180.0	2	90.0	14.95	138.50	0.00	2ND DECK	185.47	176	194	131.40	144.90	53%	C	ASSUME 2 SHELVING UNITS
671	BOS'N LKR															
671	Shelving	180.0	2	90.0	14.95	150.75	0.00	2ND DECK	202.36	197	207	147.00	154.00	54%	C	ASSUME 2 SHELVING UNITS
672	STOREROOMS AND ISSUE ROOMS															
672	DRY PROVISIONS 1															
672	Shelving	1,800.0	20	90.0	15.50	65.40	-7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	
672	Grating	1,290.2	115	11.2	14.00	65.40	-7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	FIBERGLASS 11.2 KG/M2
672	Misc. Equipment	772.6			14.50	65.40	-7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	ASSUMED 25% OF SPACE WEIGHT
672	DRY PROVISIONS 2															
672	Shelving	1,800.0	20	90.0	15.50	65.40	7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	
672	Grating	1,552.3	139	11.2	14.00	65.40	7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	FIBERGLASS 11.2 KG/M2
672	Misc. Equipment	838.1			14.50	65.40	7.70	2ND DECK	88	77	96	57.15	71.40	58%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES (3RD DECK, FR 194)															
672	Shelving	630.0	7	90.0	12.30	147.75	0.00	3RD DECK	198.07	194	202	144.90	150.50	51%	C	
672	Misc. Equipment	157.5			12.10	147.75	0.00	3RD DECK	198.07	194	202	144.90	150.50	51%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES (3RD DECK, FR 185)															
672	Shelving	720.0	8	90.0	12.30	141.00	0.00	3RD DECK	188.8	182	194	135.90	144.90	57%	C	
672	Misc. Equipment	180.0			12.10	141.00	0.00	3RD DECK	188.8	182	194	135.90	144.90	57%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES (3RD DECK, FR 176)															
672	Shelving	900.0	10	90.0	12.30	133.50	0.00	3RD DECK	178.8	176	182	131.40	135.90	47%	C	
672	Misc. Equipment	225.0			12.10	133.50	0.00	3RD DECK	178.8	176	182	131.40	135.90	47%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES (3RD DECK, FR 81, STBD)															
672	Shelving	450.0	5	90.0	12.30	63.38	7.70	3RD DECK	85.3	81	90	60.15	66.90	48%	C	
672	Misc. Equipment	112.5			12.10	63.38	7.70	3RD DECK	85.3	81	90	60.15	66.90	48%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES/PAINT LKR (3RD DECK)															
672	Shelving	450.0	5	90.0	12.30	0.38	-8.90	3RD DECK	0.5357	-4	5	-2.80	3.50	50%	C	
672	Misc. Equipment	112.5			12.10	0.38	-8.90	3RD DECK	0.5357	-4	5	-2.80	3.50	50%	C	ASSUMED 25% OF SPACE WEIGHT
672	STORES/ROPE LKR (3RD DECK)															
672	Shelving	180.0	2	90.0	12.30	0.40	8.90	3RD DECK	0.5714	-4	5	-2.80	3.50	51%	C	
673	CARGO STOWAGE															
699	OUTFIT AND FURNISH. REPAIR PARTS AND SPECIAL TOOLS															
699	O & F REPAIR PARTS	4,990.7	1	4,990.7	19.60	90.00	0.00		120.8	-4	210	-2.80	156.10	58%	E	ASSUME 2% OF TOTAL WEIGHT
	Group 600 Summary	1,230,703.3			17.81	88.50	0.34									
		wt [kg]			[m-Abv-BL]	[m-Fwd-AP]	[m-CL_y+Stbd]									