SHOWN BELOW IS THE GRC43M SERIES BASELINE SPECIFICATION. A REVISED GRC43M SERIES SPECIFICATION TO REFLECT SPECIFIC CUSTOMER REQUIREMENTS & MODIFICATIONS WILL BE PROVIDED AS NEEDED.

A) Description

1. GRC43 Series is designed to execute coastal and offshore missions, to include maritime interdiction operations, counter-piracy, counter-drug, critical infrastructure and waterways protection, high value unit escort, enforcement of laws and treaties, search and rescue, intelligence, surveillance and reconnaissance (ISR), special operating forces (SOF) insertion/extraction and national defense.
    a. Multiple deck and equipment configurations are available to expand the mission profile to include unmanned aerial vehicle launch/recovery system (i.e. ScanEagle) and other items to support customer specified weapons and sensors.

B) Dimensions and Characteristics.

1. Dimensions.
    a. Length Overall, Molded: 43.6 m (143'0").
    b. Length Waterline: 37.96 m (124'5").
    c. Beam, Molded: 7.93 m (26'0").
    d. Draft, Full Load: 2.11 m (6'11").
2. Propulsion.
    a. Twin MTU diesel engines designed for maximum continuous use. Time between overhaul is 15,000 hours with 75% of hours at flank speed.
3. Speed.
    a. Full Load Flank: 32.4 knots.
    b. Half Load Flank: 32.8 knots.
4. Range.
    a. 4,500 nm at 10 knots.
    b. 3,000 nm at 14 knots.
    c. 1,025 nm at 32.8 knots.
    d. Range calculated with 10% usable fuel remaining.
5. Tank Capacities.
    a. Fuel: 52.6 m^3 (13,630 USG).
    b. Fresh Water: 5.68 m^3 (1,500 USG).
    c. Gray Water: 4.17 m^3 (1,100 USG).
    d. Black Water: 2.04 m^3 (540 USG).

6. Displacement.
    a. Full Load: 213.9MT (471,500 lbs).
    b. Half Load: 191.2 MT (421,500 lbs).
    c. Light Ship: 158.5 MT (349,300 lbs).

C) Design and General Arrangement
1. GRC43 Series is a fine entry planing monohull based on a highly successful design. The design provides excellent speed, maneuverability, seaworthiness, durability and provides excellent range/fuel economy.
2. General Arrangement
    a. The layout is designed to maximize space and mission effectiveness. International maritime rules and guidance were closely implemented.
    b. Pilothouse: The space provides ample room for crew and equipment, and is located amidships to maximize operator comfort. Angled windows on all sides provide 360 degree field of vision while reducing glare and heat.
    c. Main Deck: Includes four staterooms, two heads and showers, and two configurable spaces to meet customer requirements. The arrangement separates seniors from crew quarters and provides the fastest access to the Machinery Spaces and Pilothouse.
    d. Lower Deck: Includes five crew berthing spaces, three heads, Mess, Galley and Machinery Spaces.
    e. Exterior: Space is maximized for crew operations and equipment use/staging. Exterior passageway width is in accordance with SOLAS requirements.
        i. Fore-Deck: Area includes the anchor equipment, deck equipment, storage, and forward designated Main Gun area.
        ii. Boat-Deck: Area includes the stern ramp, engine removal hatches, and Machinery Room ventilation.
        iii. Pilothouse-Deck: Area includes the bridge wings/controls and can be outfitted with crew-served weapons.

D) Modular Composite Construction.
1. GRC43 Series is constructed using Modular Composite Construction which results in a predictable delivery schedule, high quality and capable vessels with low life-cycle costs.
    a. Process: Primary Hull and Main Deck modules are constructed in dedicated molds which produce monolithic one piece parts with no stress or leak creating joints. Hull and Deck modules are outfitted simultaneously while in the molds. The modules are removed from the molds and prepared for joining. After the modules are joined, final construction and outfitting is finished. The complete process maximizes quality and consistency while minimizing construction time.

b. Material: Cored Composite provides the advantages of high strength-to-weight, high durability, no corrosion and long service life.
c. Techniques: Vacuum bagging and resin infusion techniques are utilized, maximizing quality and reducing weight.
d. Quality Assurance (QA): Construction QA process is approved by ABS.

E) Command and Control.
1. Equipment was selected for proven performance, value and compliance with ABS HSC and IMO 2000 HSC rules.
   a. Selected S band and X band radars provide excellent detection and tracking in a cluttered environment.
   b. Electronic Chart Display and Information Systems (ECDIS) system is a military specific design, intended for the harsh, time critical environment of navigation on military vessels.
   c. MTU Blue Vision Callosum system provides comprehensive machinery command and control.
   d. HF/VHF/SATCOM communication suite installed with space and power reservations for customer specified communication equipment.

F) Abbreviations.
AMR - Auxiliary Machinery Room
CIC - Combat Information Center
CHT - Collection, Holding and Transfer
DCS - Damage Control Station
EGR - Emergency Generator Room
ECC - Engineering Control Center
MMR - Main Machinery Room
SSDG - Ships Service Diesel Generator

The following information is listed using the Expanded Ship Work Breakdown Schedule (ESWBS):

EXPANDED WORK BREAKDOWN SYSTEM

050 DESIGN AND ENGINEERING
100 HULL STRUCTURE
200 PROPULSION PLANT
300 ELECTRIC PLANT
400 COMMAND AND CONTROL
500 AUXILIARY SYSTEMS
600 OUTFIT AND FURNISHINGS
700 ARMAMENT

050. DESIGN AND ENGINEERING

051. STANDARDS.

051.1. ABS *Guide for Building and Classing High Speed Craft.*
051.2. IMO *2000 HSC Code.*
051.3. ABS *Guidance on Ergonomic Design for Navigation Bridges.*
051.4. ABS *Guide for Bridge Design and Navigational Equipment/Systems.*
051.5. ABS *Multiple Propulsion Systems.*
051.6. ABS *Guidance for Crew Habitability on Ships.*
051.7. ABS HSNC 4.7.1/17.3 *Ammunition Magazines.*
051.8. ASTM F1166-07 *Human Engineering Design for Marine Systems, Equipment and Facilities.*
051.9. IEEE Standard 45 *A Guide to Electrical Installations on Shipboard.*
051.10. MIL-HDBK-289(SH) *Lighting on Naval Ships.*
051.11. USPHS Center for Disease Control *Vessel Sanitation Program.*
051.12. IMO *Fire Test Procedures Code.*
051.13. NATO ANEP 77 *Naval Ship VI Fire Safety.*

52. CONFIGURATION MANAGEMENT.

052.1. A Configuration Management Plan is maintained through the production contract, to provide for a complete "as delivered" configuration.
052.2. Deliverables:
052.2.1. As built drawings, plans, specifications and diagrams.
052.2.2. Technical manuals for all equipment.
052.2.3. Bill of materials for parts and components.
052.2.4. Builders Trial test reports.

052.2.5. Equipment warranties.

052.2.6. Class or other required documentation.

100. HULL STRUCTURE

101. DESIGN.

100.1. Structure designed/constructed to ABS *Guide for Building and Classing High Speed Craft.*

100.2. Fully operational SS3; survive SS6.

102. HULL SHELL AND STIFFENERS.

102.1. High tolerance dedicated molds created with 5 Axis CNC router.

102.2. Monolithic structures without joints eliminates structural stress.

102.3. ABS approved materials and laminating system.

102.4. 100% Vinylester resin.

102.5. High quality E glass fabrics.

102.6. Carbon reinforcement in strategic locations.

102.7. Closed cell damage tolerant foam cores.

102.8. NPG Gel Coat for maintenance free exterior finish.

102.9. Cores are installed using vacuum assisted method.

102.10. Structural bulkheads and decks are CNC cut and resin infused.

103. DOORS, HATCHES, SCUTTLES AND MANHOLES.

103.1. Dimensions per ASTM F1166-07 *Human Engineering Design for Marine Systems, Equipment and Facilities.*

103.2. Exterior doors.

103.2.1. Weathertight with quick acting operation.

103.3. Stern Ramp Door is molded GRP.

103.4. Watertight doors.

103.4.1. Main Machinery Room (3).

103.4.2. Aft equipment (2).

103.4.3. Lower deck (2).

103.5. Interior fire doors.

103.5.1. Galley and Dry Stores equipped with magnetic catches.

103.5.2. Staircase and ECC doors are equipped with automatic closers.

103.6. Exterior hatches

103.6.1. Watertight hinged aluminum with spring lift, fitted with scuttles.

103.6.2. Machinery hatches are cored composite.

103.7. Interior hatches.

103.7.1. Watertight cast aluminum.

104. MAST.

104.1. Molded lightweight carbon/E glass composite structure with attachment points for equipment.

105. FOUNDATIONS.

105.1. Engine and Generator foundations are powdercoated welded aluminum.

200. PROPULSION PLANT

201. GENERAL.

201.1. Main propulsion is provided by (2) diesel engines driving fixed pitch propellers.

201.2. Access for repair and maintenance IAW ASTM F1166. F1166-07 *Human Engineering Design for Marine Systems, Equipment and Facilities.*

202. MAIN ENGINES.

202.1. (2) MTU 16V4000 M73L engines rated at 3860 hp (2880 kW).

202.1.1. EPA Tier II and MARPOL certified.

202.1.2. 15,000 hour Time Between Overhaul (TBO).

202.1.3. 24 Volt starting system.

202.1.4. 24 Volt alternators.

202.1.5. Electric block heaters 460 VAC 9000 watt.

202.1.6. Automatic Lube oil filter system.

202.1.7. Prelube pump 460 VAC.

203. REDUCTION GEARS.

203.1. ZF 9050A 2.96:1 ratio.

203.1.1. Autotroll trolling valves.

203.1.2. Trailing pumps.

204. PROPULSION SHAFTING.

204.1. SAE J755 Marine Propeller Shaft Ends and Hubs.

204.2. Aquamet 22-HS 5 ½" (14cm) shafts.

204.3. Struts with replaceable cutlass bearings.

204.4. Composite replaceable bearing.

204.5. Carbon face seals replaceable in water.

204.6. Crossover lubrication system to allow single engine operation.

205. PROPELLERS.

205.1. CFD wake adapted design 5-blade.

205.2. CNC machined to S class tolerance.

205.3. Nibral material.

206. PROPULSION CONTROL SYSTEM.

206.1. MTU Blue Vision Electronic controls and monitoring.

206.2. Main operating station is in the Pilothouse.

206.3. Local control in MMR.

206.4. Monitoring in MMR and ECC.

206.5. Wing stations are equipped with controls.

207. PROPULSION SEAWATER COOLING.

207.1. Integrally molded hull water inlets with strainer.

207.2. Y-Type seawater strainer with cleanable filters.

207.3. Cross connection capability.

207.4. Connection for compressed air cleanout.

207.5. Engine mounted seawater pumps.

208. PROPULSION EXHAUST SYSTEM.

208.1. Water cooled underwater exhaust with integral molded piping.

208.2. Stainless hard coated collectors and elbows.

208.3. Integral lift muffler system.

300. ELECTRICAL

301. GENERAL.

301.1. Standard: IEEE Standard 45 *A Guide to Electrical Installations on Shipboard.*

301.2. Primary power is 480 VAC 3 phase.

301.3. Transformers for conversion to 120/208 VAC.

301.4. (2) Ship Service Diesel Generators (SSDG)

301.4.1. Capable of operating in parallel.

301.5. Emergency diesel generator.

301.6. Shore power with isolation transformer/converter.

301.7. Electrical services provided:

301.7.1. 480 VAC, 60 Hz, 3 phase.

301.7.2. 120/208 VAC, 60 Hz.

301.7.3. 24 VDC.

302. CABLING.

302.1. IEEE STD 45 shipboard cable.

302.2. Insulation is low smoke and halogen free.

303. SHIP SERVICE DIESEL GENERATORS (SSDG).

303.1. Located in MMR.

303.2. (2) Northern Lights M1064H 99 kW.

303.2.1. EPA Tier II compliant.

303.2.2. 500hr oil change interval reduces maintenance.

303.2.3. 1800 rpm operation for long life.

303.2.4. Anti-condensation heaters.

303.2.5. PTO's for bow thruster hydraulic system.

303.3. Electronic control and monitoring in ECC.

303.4. Remote control in Pilothouse.

303.5. Local control in MMR.

304. EMERGENCY GENERATOR.

304.1. Located on Main Deck in EGR.

304.2. Northern Lights 40kW M40C2.

304.2.1. Automatic starting and connection to bus.

304.2.2. EPA Tier II.

304.2.3. Anti-condensation heater.

304.2.4. Local instrumentation and controls.

304.2.5. Wet exhaust system.

304.3. Dedicated 50 USG (.19m^3) fuel tank.

305. BATTERIES.

305.1. Batteries are installed to provide 24VDC power for Ships Service, Main Engine, SSDG and Emergency systems.

305.2. All batteries are of Absorbed Glass Mat (AGM) design.

305.3. Main Engines.

305.3.1. (2) Banks of (2) 8D batteries.

305.3.2. Selector switch installed to allow an engine to start from either bank.

305.4. Ship Service Battery Bank.

305.4.1. Normal source of power for Navigation electronics.

305.4.2. Consist of (2) 8D batteries.

305.5. SSDG Bank.

305.5.1. (2) Group 31 batteries for each generator.

305.5.2. Selector switches installed to allow generators to start from engine start batteries.

305.6. Emergency Generator.

305.6.1. (2) Group 31 batteries.

305.7. Reserve Bank.

305.7.1. Switchboard located in Pilothouse.

305.7.2. (2) Group 31 Batteries with dedicated charger.

305.7.3. Supplies power to communication equipment and emergency lighting.

305.8. Battery Chargers.

305.8.1. Main Engines (2) 45 amp.

305.8.2. Ship Service 95 amp.

305.8.3. SSDG 20 amp.

305.8.4. Emergency Generator 20 amp.

305.8.5. Reserve 20 amp.

305.8.5.1. Automatic 3 stage chargers.

305.8.5.2. Chargers are equipped with temperature sensors.

306. POWER CONVERSION EQUIPMENT.

306.1. Shore Power Transformer: 480VAC 3 phase 75kVA.

306.2. Dedicated transformer for electronics.

306.3. Uninterruptible Power Supply (UPS) for navigation equipment.

306.4. Lighting transformers 120/208 VAC.

307. ELECTRIC POWER DISTRIBUTION.

307.1. Switchboards.

307.1.1. Main switchboard in ECC.

307.1.2. Emergency switchboard in Main Deck passageway.

307.1.3. Galley switchboard in Mess.

307.1.4. Navigation and Communications switchboard in Pilothouse.

307.1.5. Local panels installed as appropriate.

307.1.5.1. Seamless source transfer switching.

307.1.5.2. Paralleling capability for generators.

307.1.5.3. Local circuit breakers for AC and DC circuits.

307.1.5.4. Electrical instrumentation.

307.1.5.5. Insulation Monitor.

307.2. Emergency switchboard.

307.2.1.1. Automatic connection to emergency generator.

307.2.1.2. Volt and Amp instrumentation.

307.2.1.3. Insulation Monitor.

307.3. Vital distribution system.

307.3.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

307.3.2. Standard: IMO *2000 HSC*.

307.3.3. Emergency power or an alternate source of power is available to the following services:

307.3.3.1. Emergency lighting.

307.3.3.2. Navigation lights and lights required by COLREGS.

307.3.3.3. Electrical internal communication equipment for announcements.

307.3.3.4. Navigation equipment.

307.3.3.4.1. Speed Log.

307.3.3.4.2. Depth Sounder.

307.3.3.4.3. Radar.

307.3.3.4.4. GPS.

307.3.3.4.5. RAI.

307.3.3.4.6. ECDIS.
307.3.3.4.7. Searchlight.
307.3.3.4.8. Night Vision System.
307.3.3.4.9. Autopilot.
307.3.3.4.10. Hailer system.
307.3.3.4.11. AIS.
307.3.3.5. Fire detection and general alarm systems.
307.3.3.6. Fire extinguishing systems.
307.3.3.7. Radio communication equipment.
307.3.3.7.1. VHF Radios.
307.3.3.7.2. Navtex.
307.3.3.7.3. MF/HF Radio.
307.3.3.7.4. Inmarsat.
307.3.3.8. Compartment ventilation.
307.3.3.9. Fuel transfer pumps.
307.3.3.10. Steering system.
307.3.3.11. Propulsion control.
307.3.3.12. Monitoring and safety systems.
307.3.3.13. Watertight doors indicating system.
307.3.3.14. Fire Door closers.
307.3.3.15. Horn.
307.3.3.16. Emergency bilge pump.
307.3.3.17. MMR ventilation (low speed).
307.3.3.18. Pilothouse and communication air conditioning.
307.3.3.19. Emergency generator compartment ventilation.
307.3.3.20. Medical equipment.
307.3.3.21. Chargers for engine start and reserve power batteries.

308. LIGHTING DISTRIBUTION SYSTEM.

308.1. Standard: ABS *Guidance for Crew Habitability on Ships*.
308.2. Standard: MIL-HDBK-289(SH) *Lighting on Naval Ships.*
308.3. Normal ship service lighting system.
308.3.1. Interior lighting.
308.3.1.1. 120 VAC for general and detail lighting.
308.3.1.2. Fluorescent multiple tube fixtures.
308.3.2. Exterior weather deck lighting.
308.3.2.1. Yellow florescent fixtures.
308.3.3. Flood lights on mast.
308.3.3.1. Illuminate alongside operations and fore and aft decks.

308.3.3.2. Switch located in Pilothouse.

308.3.4. Stern ramp lighting for small boat operations at night.

308.3.4.1. Blue LED lighting.

308.3.4.2. Switch located in Pilothouse and at Stern Ramp.

308.3.5. Flood lighting for flags on mast.

308.3.5.1. Switch located in Pilothouse.

308.3.5.2. Shielded to prevent confusion with navigation lights.

308.4. Low Level Lighting (LLL).

308.4.1. Provided for darkened ship condition.

308.4.2. LLL color is blue.

308.4.3. LLL provided in Mess, Galley, berths, passageways, staircases, Pilothouse.

308.5. Emergency lighting.

308.5.1. Automatically provides reduced general illumination during times of loss of ships power.

308.5.2. Dedicated LED fixtures.

308.5.3. Source of power is the reserve battery bank.

308.5.4. Pilothouse fixtures are locally switched (non-automatic operation).

308.6. Light Switches.

308.6.1. Single pole, triple throw switches used in spaces which have normal and low level lighting.

308.6.2. Pilothouse switch fitted with means to prevent accidental operation.

308.7. Receptacles

308.7.1. Receptacles are installed as required throughout the ship.

308.7.2. Berths, Mess and sanitary compartment receptacles are protected by GFCI breakers.

308.7.3. (2) 120 VAC GFCI receptacles at the AMR workbench.

308.7.4. GFCI protected receptacles installed on the weather decks.

308.7.5. Receptacle inside bridge console cabinet for servicing equipment.

308.7.6. GFCI receptacles in Galley for each piece of portable electrical equipment.

309. SHOREPOWER.

309.1. Sources: 480 VAC, 220 VAC, 60Hz.

309.2. (2) 480 VAC, 75 kVA, 3-phase transformer.

309.3. Shore feed located aft end at port side of Stern Ramp.

309.4. (1) 30 m (100') cord.

310. LIGHTNING PROTECTION.

310.1. Hull plate and mast probe.

400. COMMAND AND CONTROL

401. PILOTHOUSE.

401.1. Primary Control station is on centerline with 360 degree field of vision. All controls for operation, navigation, communication and emergency control. Configurable weapons control space.

401.2. Design Guidance:

401.2.1. ABS *Guide for Bridge Design and Navigational Equipment/Systems*.

401.2.2. IMO *2000 HSC*.

401.3. Stations:

401.3.1. Conning: Located forward centerline.

401.3.2. Maneuvering: Located forward starboard.

401.3.3. Monitoring: Located forward port.

401.3.4. Route Planning: Located starboard, aft of maneuvering station.

401.3.5. Communications: Located aft port.

401.3.6. DCS: Located aft starboard.

401.4. Wing Stations are installed port and starboard on the aft pilothouse deck.

401.4.1.1. Engine, steering, and bow thruster controls.

401.4.1.2. GRP covers.

402. SHIPS MONITORING AND CONTROL SYSTEM.

402.1. Centralized Monitoring Stations.

402.1.1. Pilothouse, MMR and ECC.

402.1.2. Systems give detailed equipment status and alarm information.

402.2. Main engine monitoring and control in Pilothouse.

402.2.1. 15” display.

402.2.2. RCS-5 FPP engine controls.

402.2.3. Engine speed indication.

402.2.4. Propeller speed indication.

402.2.5. Engine start/stop.

402.2.6. Emergency engine stop.

402.3. MMR local control of main engines.

402.3.1. MTU local electronic control panels for each engine.

402.3.2. Local engine control.

402.3.3. Propeller speed indication.

402.3.4. Engine start/stop.

402.3.5. Emergency engine stop.

402.3.6. Lube oil priming pump control.

402.4. Monitoring in Pilothouse, ECC and MMR.

402.4.1. 15” display
402.4.2. Generator power condition and distribution.
402.4.3. Emergency electrical system control and monitoring.
402.4.4. Firemain pressure alarm.
402.4.5. Flooding alarm system.
402.4.6. FM200 discharge alarm.
402.4.7. Watertight door position.
402.4.8. Sewage tank level alarm.
402.4.9. Gray water tank alarm.
402.4.10. Water tank levels.
402.4.11. Fuel oil tank levels and alarms.
402.4.12. General alarm system.
402.4.13. Long term data storage.

402.5. The following alarms are integral to specific systems.
402.5.1. Whistle control alarm.
402.5.2. Steering failure alarm.
402.5.3. Steering system hydraulic loss of pressure alarm.
402.5.4. Steering gear power failure alarm.
402.5.5. Autopilot power failure alarm.
402.5.6. Gyrocompass power failure alarm.

403. FIXED FIRE DETECTION AND ALARM SYSTEM.

403.1. Deckma type approved system.
403.1.1. Control panel is located at the DCS in the Pilothouse.
403.1.2. Addressable smoke detectors in all spaces.
403.1.3. Optical flame detectors in MMR.
403.1.4. Manual call points throughout.
403.1.5. Audible and visual alarms.
403.1.6. Provided with (2) sources of power and internal battery backup.

404. EMERGENCY SHUTDOWN SYSTEM.

404.1. Ventilation systems.
404.1.1. Fans are capable of being stopped from outside the space.
404.1.2. MMR ventilation fan stops are located in AMR and DCS.
404.1.3. Galley make up fan and hood fan stops are located in Mess and DCS.
404.1.4. Magazine fan stops are located outside of magazine and at DCS.

404.2. Fuel oil pumps are equipped with remote stops on deck and in ECC and DCS.

405. NON-ELECTRONIC NAVIGATION AIDS.

405.1. Magnetic Compass mounted on centerline forward of helm.
405.2. Clinometer heeling and trimming instruments.

405.3. Day shapes provided IAW COMDTINST M16672.2D Navigation Rules, International – Inland.

405.4. Clock – Brass with chime.

406. NAVIGATION, SIGNAL AND SEARCHLIGHTS.

406.1. Meets COLREGS and COMDTINST M16672.2D.

406.2. Aqua Signal 70M 120VAC Navigation Lights with reserve lights.

406.2.1. Vessel at anchor.

406.2.2. Vessel underway.

406.2.3. Towing astern, length of tow exceeds 200m.

406.2.4. Towing astern, length of tow 200m or less.

406.2.5. Towing alongside.

406.2.6. Vessel not under command.

406.2.7. Vessel restricted in ability to maneuver.

406.3. Day light signal light.

406.4. Searchlight: (2) Carlisle Finch 350 watt black color 230 VAC.

406.5. Law enforcement light.

407. ELECTRONIC NAVIGATION SYSTEMS.

407.1. DGPS: (2) Furuno GP150 Differential and WAAS.

407.2. RDF: Rho Theta RT-500-M 4-Band Precision Direction Finder.

407.3. Gyro: Simrad with alarm panel and bearing repeater.

407.4. Speed Log: Furuno DS80.

407.5. RAI: Jastrom WP IC#61614-09.

407.6. Weather Coastal Environmental system interfaced with speed log.

407.6.1. Wind speed and direction solid state.

407.6.2. Temperature and humidity sensor.

407.6.3. Barometric pressure sensor.

407.7. Fluxgate compass: Furuno PG 500R interfaced with RD30 display.

407.8. Depth Sounder (Primary): Furuno FCV1200.

407.9. Depth Sounder (Secondary): Furuno 235DHT-LMSE smart sensor with RD30 display.

407.10. Radar (X Band): Furuno with 8’array.

407.11. Radar (S Band): Furuno with 12’ array.

407.12. ECDIS: Offshore Systems Electronic Chart Precise Integrated Navigation System (ECPINS®) Warship W.

407.12.1. (2) Stations: Monitoring and Route Planning.

407.13. CPU based Chartplotter: Furuno MaxSea at Route Planning station.

407.14. Monitors: Daylight viewable/fully dimmable LCD.

407.15. AIS: L3 Protec.

407.16. Visual Search/Surveillance System: FLIR SeaFlir II stabilized infrared and daylight cameras.

407.16.1. Mounted at Mast-top for 360 degree search/surveillance.

407.17. Autopilot: Simrad AP50 plus.

407.18. Window Wipers: Exalto with fresh water wash function.

407.19. Generator control panels start/stop.

408. EXTERNAL COMMUNICATIONS.

408.1. VHF: Furuno FM4000, located at Monitoring station.

408.2. VHF: Furuno FM4000, located at Maneuvering station.

408.3. VHF: Furuno FM8800, located at Route Planning station.

408.4. VHF: AM civil aviation ICOM A110, located at Route planning.

408.5. Navtex: Furuno NX 700P, located at Route Planning station.

408.6. GMDSS Equipment, located at Communications station.

408.6.1. FM8800S DSC-VHF/FM Radio.

408.6.2. FS1570 MF/HF Radio/DCS watch receiver/Telex.

408.6.3. IB583 Terminal.

408.6.4. PP510 Printer.

408.6.5. Felcom 15 Inmarsat C.

408.7. SATCOM: KVH FB500.

408.8. VSAT: KVH V7.

408.9. Cell: (2) Tellular SX7T GSM Broadband Path.

408.10. EPIRB: ACR Globalfix Pro.

408.11. Stern launch communications.

408.11.1. Icom Hand held VHF radios.

408.12. Space and power reservations for customer added equipment.

408.13. Antennas.

408.13.1. VHF: Comrod.

408.13.2. SSB: Comrod.

408.13.3. Cell: Comrod.

408.13.4. AM/FM: Comrod.

409. AUDIBLE SYSTEMS.

409.1. Horn/Hailer: Kahlenburg KB-30.

409.2. Bell: 8” Perko.

410. INTERNAL COMMUNICATION.

410.1. Telephone System.

410.1.1. Panasonic TDA50 PBX system.

410.1.2. Commercial multi-line telephone service, facsimile and data transmission (when in port).

410.1.3. Cell phones.

410.2. Sound Powered Phone System.

410.2.1. Maneuvering and Docking Circuit (1JV).

410.2.2. Weapons Control Circuit (1JP).

410.2.3. Engineering Circuit (2JV).

410.2.4. Damage Control Circuit (2JZ).

410.3. General Announcing.

410.3.1. General Announcing system (1MC) and Loudhailer (6MC).

410.3.1.1. Effective in all spaces.

410.3.1.2. (4) Topside hand free talk back loud speakers.

410.3.1.3. The spaces served by the 1MC speakers are divided as follows:

410.3.1.3.1. Crew spaces.

410.3.1.3.2. Topside.

410.3.1.3.3. Engineering Spaces.

410.3.2. Alarms.

410.3.2.1. General Alarm.

410.3.2.2. Collision Alarm.

410.3.2.3. Chemical Alarm.

411. CLOSED CIRCUIT TELEVISION SYSTEM (CCTV).

411.1. CCTV system with cameras provides complete coverage of the exterior MMR.

411.2. Displays are located at the following locations:

411.2.1. Monitoring station.

411.2.2. DCS for MMR.

411.2.3. Mess (displayed on television monitors).

411.2.4. CO, XO, and CPO/EPO berths (displayed on television monitors).

411.3. Switcher: Elbex EXS125 installed at Monitoring station.

411.4. Cameras.

411.4.1. Elbex EC97.

411.4.2. High resolution day/night capable.

411.4.3. Pan, Tilt, 10x Zoom (PTZ) color.

411.4.4. Overhead dome mount.

411.4.5. High Sensitivity (0.5 Lux) for operation with LLL and night operations.

411.4.6. Locations:

411.4.6.1. (2) MMR.

411.4.6.2. (2) Side decks port and starboard.

411.4.6.3. (2) Mast giving views of foredeck and aft for stern ramp operations.

411.4.6.4. FLIR camera is integrated.

412. LOCAL AREA NETWORK (LAN).

412.1.1. CAT 5 to all spaces.

413. ENTERTAINMENT AND TRAINING.

413.1. Satellite Television KHV M7.

413.2. Omni directional TV/AM/FM antenna.

413.3. Mess.

413.3.1. (3) 32" HD LCD televisions.

413.3.2. AM/FM stereo/surround sound receiver.

413.3.3. Blue Ray DVD player.

413.3.4. Cable TV.

413.3.5. CCTV.

413.3.6. Connections for laptop presentations.

413.4. Main Deck Staterooms.

413.4.1. 22" LCD television.

413.4.2. Blue Ray DVD player.

413.4.3. Cable TV.

413.4.4. CCTV.

413.5. Cable TV shore tie is located next to telephone shore connection.

500. <u>AUXILIARY SYSTEMS</u>

501. PIPING.

501.1. VIEGA stainless for fuel systems.

501.2. 9010 Copper Nickel (CUNI) for seawater systems.

501.3. MEPLA potable water piping.

501.4. All piping is labeled.

502. HEATING, VENTILATION AND AIR CONDITIONING.

502.1. Technicold 30 ton chillwater air conditioning plant.

502.1.1. (3) 10 ton chillers.

502.1.2. Variable frequency drives.

502.1.3. Electronic control system.

502.2. All normally manned spaces are air conditioned.

502.3. Air conditioning provided as needed by equipment.

502.4. Each space is individually zoned with dedicated fan coils.

502.5. Pilothouse has dedicated chiller capable of being powered by emergency generator.

502.6. Makeup air system for Main Deck, Lower Deck and Galley.

503. MACHINERY VENTILATION.

503.1. Delta T ventilation system.

503.1.1. (2) 30" 480VAC intake fans.

503.1.2. (2) 21" 480VAC exhaust fans.

503.1.3. Delta T Demister filters.

503.1.4. Delta T P/T4 automated control system.

503.2. Fire dampers installed with manual closing.

503.3. Remote closing control at DCS.

504. COMPARTMENT VENTILATION

504.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

504.2. Standard: IMO *2000 HSC*.

504.3. Fuel tank and bilge spaces are fitted with natural ventilation.

504.4. Galley Gaylord ventilation hood with R102 fire suppression and wash system.

504.5. Makeup air system for Main deck, Lower deck and Galley.

504.6. Heads are fitted with exhaust fans.

504.7. Garbage storage space.

504.8. Magazine is fitted with mechanical ventilation.

504.9. All spaces without mechanical ventilation are fitted with ventilation tubes.

505. REFRIGERATION.

505.1. 50cf modular refrigerator adjacent to Galley.

505.2. 50cf modular freezer adjacent to Galley.

505.3. Icemaker high output in Galley.

506. FIRE MAIN.

506.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

506.2. Standard: IMO *2000 HSC*.

506.3. Delivers seawater to firefighting stations.

506.4. System is capable of being charged locally at pumps or at DCS.

506.5. SOLAS international connection.

506.6. Fire Pumps.

506.6.1. (2) 10hp 460VAC.

506.7. Hydrants.

506.7.1. All spaces can be covered with (2) hydrants with single 50' hoses.

506.7.2. Located: Main Deck (3), AMR, Mess.

506.7.3. Fire Plug: 1.5" IPS.

506.7.4. Hoses: 1.5" NPSH x 50'.

506.7.5. Nozzles: POK Turbokador variable pressure variable quantity.

506.7.5.1. CG Approved 162.027.

506.7.6. AFFF eductor at each station.

506.8. The arrangement allows isolation of the fire main in the MMR.

507. FIRE SUPPRESSION.

507.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

507.2. Standard: IMO *2000 HSC.*

507.3. MMR FM200.

507.3.1. Control on Main deck and at DCS.

507.3.2. FM200 locker is a dedicated space on Main Deck.

507.3.3. Alarms give min 20 sec warning of discharge.

507.4. MMR AFFF system.

507.4.1. Controls located in AMR.

507.4.2. Protects MMR bilges from oil fire through fixed sprinkler system.

507.5. Sprinkler system.

507.5.1. Automatic wet sprinkler system.

507.5.1.1. Spaces served are Galley, Mess, Lower Deck Berthing, Main Deck Berthing and configurable spaces, passageways and hull voids.

507.5.1.2. Sprinkler heads are corrosion resistant marine type.

507.5.1.3. (6) spare heads are supplied.

507.5.2. Sprinkler pump.

507.5.2.1. Fitted with (2) sources of power.

507.5.2.2. Pumps are located in MMR.

507.5.2.3. Piping.

507.5.2.3.1. CuNi approved piping.

507.5.2.3.2. Sprinkling stand by pressure is automatically charged from vessel potable water system.

507.5.3. Plans are displayed in Pilothouse.

507.6. ECC and emergency generator switchboards are fitted with automatic FM200 systems.

507.7. Galley Hood.

507.7.1. R102 suppression system.

507.7.2. Control at galley entrance.

507.7.3. Grease trap with automatic cleaning system.

507.7.4. Fire Damper.

507.8. Portable Extinguishers.

507.8.1. Dry chemical extinguishers installed at all exits, MMR entrances, passageways, exterior lockers.

507.8.2. CO2 extinguishers installed in machinery spaces.

508. BILGE SYSTEM.

508.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

508.2. Standard: IMO *2000 HSC.*

508.3. Bilge Pumping.

508.3.1. (2) 480VAC, three phase 5 HP 100 GPM pumps.

508.3.2. Manifold in AMR with lines to each watertight compartment. Includes check valves, strainers, and priming system.

508.3.3. Emergency pump is Main Engine seawater pumps for MMR.

508.4. Oily Bilge System.

508.4.1. Complies with IMO MEPC 107(49).

508.4.2. Recovered Energy Boss 2T-107 oil/water separator.

508.4.2.1. Direct MMR suction.

509. POTABLE WATER SYSTEM.

509.1. Standard: USPHS Center for Disease Control *Vessel Sanitation Program*

509.2. (2) Goulds SBV 480VAC pumps with pressure tank.

509.2.1. Variable frequency drive.

509.3. (2) Sea Recovery Aqua whisper 1800DX compact watermakers.

509.3.1. Commercial filters.

509.3.2. Auto flush with charcoal filter.

509.3.3. Connections for chemical flush.

509.4. Water tanks.

509.4.1. (2) 316L stainless steel.

509.4.2. Electronic and sight gauges.

509.4.3. Manholes on side of tanks.

509.4.4. Fill connection.

509.4.4.1. ¾" NH with cap secured by chain.

509.4.4.2. Color is dark blue.

509.5. Water treatment.

509.5.1. EverPure SSFM-50AC Automatic proportioning brominator for output of watermakers.

509.5.2. Everpure SSFM-100B recirculating bromine feeder unit for disinfection of potable water tanks.

509.6. Water heaters: (4) 50 USG (.19m³) electric.

509.7. Freshwater washdown.

509.7.1. Hose bibs with ¾ NH.

509.7.2. Locations: MMR, AMR, CHT, Foredeck, Stern, Boat Deck and Pilot House Deck.

509.8. Distribution Piping: Geberit Mepla (ASTM, NSF, ISO, DIN 16893 compliant).

510. LUBE OIL SYSTEM.

510.1. Dedicated clean and dirty oil tanks are installed.

510.2. Pumps are installed to remove and add oil through hoses installed on reels.

510.3. Quick connect fittings are installed on all sumps.

510.4. Lube oil tank.

510.4.1. 160 USG (.606 m^3) aluminum tanks.

510.4.2. Deck fill on weather deck.

510.4.3. Tank cleanout plate.

510.4.4. Fill pump with hose reel.

510.5. Used oil tank.

510.5.1. 245 USG (.927 m3) aluminum tank.

510.5.2. Deck discharge.

510.5.3. High level alarm in Pilothouse, ECC and MMR.

510.5.4. Dip tape.

510.6. Double diaphragm air pumps with dedicated hose reels.

511. FUEL OIL SYSTEM.

511.1. Standard: ABS *Guide for Building and Classing High Speed Craft.*

511.2. Standard: IMO *2000 HSC.*

511.3. Approximate capacity 13,630 USG (51.63m³).

511.4. Welded aluminum tanks.

511.4.1. Bolted inspection hatches.

511.4.2. Dip tapes and/or magnetic sight gauges for sounding.

511.4.3. Electronic fuel level monitoring with alarms.

511.5. (2) Service tanks appx. 1860 USG (7.05m³) ea.

511.5.1. Magnetic sight glasses.

511.6. MTU KFWA-2 Fuel treatment system for each main engine.

511.7. Fuel Transfer.

511.7.1. Fuel transfer station located in MMR.

511.7.2. Touch screen control of fuel transfer with auto quantity shutoff.

511.7.3. Tank levels displayed on 15" monitor.

511.7.4. Transfer manifold with valves for all tanks.

511.7.5. (2) 480 VAC 50gpm (189l/m) transfer pumps.

511.7.6. DC pump for priming of transfer pumps and as backup.

511.7.7. Transferred fuel is treated by Facet filtering system.

511.7.8. Remote stop control on deck, DCS and ECC.

511.8. Small Boat fuel system for fueling alongside or in stern ramp.

511.9. Piping: Viega Marine Propress Inox.

512. AIR COMPRESSOR.

512.1. Kaeser SX5 460 VAC rotary screw compressor with in-line water separator and regulator.

512.2. 30 gallon tank.

512.3. Outlets provided at MMR, AMR, Main Deck fore and aft, Pilothouse deck and EGR.

512.4. Retractable hose reel installed in MMR.

513. STEERING.

513.1. Standard: ABS *Multiple Propulsion Systems.*

513.2. Jastram commercial grade full follow up power steering.
513.3. Dedicated hydraulic system with engine mounted pumps.
513.4. Controls at Pilothouse and wing stations.
513.5. Emergency steering in starboard space aft of engine room.
513.5.1. Manual helm.
513.5.2. Compass repeater.
513.5.3. Telephone.
513.5.4. Sound powered phone.
513.6. Rudder angle indicator at each steering station.

514. RUDDERS.

514.1. CFD Wake adapted foil-shape stainless steel rudders.
514.2. Composite rudder bearing.
514.3. Rudder seals dripless type face seal.

515. STABILIZERS.

515.1. Naiad 420 with 12 sf fins.
515.2. Multisea II electronic controls in Pilothouse.
515.3. Independent lic system with pumps on Main Engines.

516. BOWTHRUSTER.

516.1. ABT 65hp 16" hydraulic bowthruster.
516.2. Hydraulic power from main system with PTO's on SSDG's.
516.3. GRP inlet gratings.

517. ANCHOR SYSTEM.

517.1. Hydraulic winch with capstan.
517.2. Single Poole SHHP anchor.
517.3. Combination chain and synthetic rode.

518. MOORING AND TOWING.

518.1. (5) stainless steel bitts per side.
518.2. Closed chocks at transom.
518.3. Closed towing chocks and padeye on bow.
518.4. Muir VC8000 hydraulic capstans.
518.5. Designed to tow a vessel of similar size.
518.5.1. Towrail with Norman posts.
518.5.2. High tensile steel tow bit.
518.5.3. Ratchet type hawser reels below decks.
518.6. Mooring lines.
518.6.1. (10) 1.5" x 30 meter.
518.6.2. (8) Fenders 4' x 30".

519. STERN RAMP.

519.1. Composite ramp with capacity up to 8 meter RHIB.
519.1.1. Bell shaped entry to improve retrieval.
519.1.2. Wave mitigation system to improve rough water operations.
519.1.3. Ramp guides are shock absorbing UHMW.
519.2. Vertical opening composite transom door.
519.2.1. Hidden hydraulic rams powered by central system with backup HPU.
519.2.2. Door controls at ramp and Pilothouse.
519.3. RHIB recovery.
519.3.1. Pullmaster PL5 winch.
519.3.1.1. Recovery speed 65fpm.
519.3.1.2. Controls at stern door controls.
519.3.1.3. Sea Catch TR7 quick release.
519.3.2. Blue LED lighting.
519.4. 30A Shore power outlet for RHIB.

520. BOATS.

520.1. Zodiac Hurricane H733 (or comparable) RHIB.
520.1.1. Composite Hull.
520.1.2. Center console.
520.1.3. Furuno Navnet 3d Chartplotter and radar.
520.1.4. VHF radio/loudhailer.
520.1.5. Whalen siren.
520.1.6. Law enforcement light.
520.2. (2) 25 person USCG approved life rafts.
520.2.1. Hydrostatic release.
520.2.2. Solas A pack.
520.2.3. Aluminum cradle.

521. POLLUTION CONTROL SYSTEMS.

521.1. Blackwater system.
521.1.1. Fiberglass tank.
521.1.1.1. Inspection hatch.
521.1.1.2. Vented to each side.
521.1.1.3. Electronic level monitoring.
521.1.1.4. Ozone generator.
521.1.1.5. Connection to fire main for tank cleaning.
521.1.2. Edson 120ELB-40-200 460VAC pump for overboard and deck discharge.
521.1.3. Headhunter SBS-M military stations with freshwater flush.
521.1.4. Headhunter TW-HMX-511 treatment system.
521.1.4.1. USCG Type II approved.

521.1.4.2. MEPC 2(VI) type approved.

521.1.4.3. Rated at 1800 gpd (6813 l/d).

521.1.4.4. Treats black and gray water.

521.2. Greywater system.

521.2.1. Aluminum tank.

521.2.2. Serves showers, sinks, and other potable water users.

521.2.3. Greywater pump discharges to treatment system, overboard, or to deck fitting.

521.2.4. Electronic monitoring.

600. OUTFIT AND FURNISHING

601. DRAFT MARKS.

601.1. Numerals painted black above the boot topping and white on the boot topping and below.

602. KEYS.

602.1. All locks provided with (2) keys.

602.2. Lock installed on food storage, Galley, equipment lockers, repair lockers, damage control lockers, berth lockers and clothes lockers.

602.3. Keys provided with engraved tags.

602.4. Key locker installed in XO stateroom.

603. RUBRAIL.

603.1. Rubber D shaped guard around shear.

603.2. Rubber D guard on aft hull side and lower guard.

604. THRU-HULLS.

604.1. All thru-hull fittings bronze with bronze valves and bonding.

604.2. Main engine are bronze butterfly.

605. RAILS.

605.1. Stanchions are anodized aluminum.

605.2. (3) course 3/8" sleeved Aramid fiber black lifelines with turnbuckle and clevis.

606. CANVAS COVERS.

606.1. Provided for anchor winch, RHIB recovery winch, and control stations.

606.2. Sunbrella material.

607. NONSTRUCTURAL BULKHEADS.

607.1. Noncombustible material IMO HSC compliant panels.

607.2. High pressure fire retardant laminates (HPFRL) for face.

608. FLOOR PLATES.

608.1. Fiberplate type IFR fiberglass: MMR and AMR.

608.2. Hinged floorplates for routine access have flush grabs, hinges and latches.

609. LADDERS.

609.1. Ladders are designed to ASTM F1166-07.

609.2. Ladder treads are replaceable Type I meeting MIL-T-24636.

609.3. Vertical ladders Pilothouse roof, transom, and escape scuttles.

609.4. Inclined ladder control room.

609.5. Gangway, stowed on starboard main deck side.

610. INTERIOR DOORS.

610.1. Standard: ABS *Guidance for Crew Habitability on Ships*.

610.2. Noncombustible construction.

610.3. SS hinges with removable pins.

610.4. Doors to stateroom, berthing spaces and working compartment with no secondary exit are fitted with kick-out panels.

611. WINDOWS.

611.1. All windows fitted in frames bolted to structure.

611.2. Clear laminated safety glass.

611.3. Pilothouse has opening window port and starboard.

611.4. Windows are fitted with weathertight deadlights.

612. PORTLIGHTS.

612.1. On Main Deck in berths.

612.2. Watertight.

612.3. Fitted with integral deadlight covers.

612.4. All passage doors to weather deck have fixed portlights.

613. WINDSHIELD WIPERS.

613.1. Exalto 110VAC with pantograph arms.

613.2. All (5) forward Pilothouse windows.

614. PAINTING AND COATING.

614.1. Sea Hawk high build epoxy primer.

614.2. Sea Hawk BIOCOP low VOC black bottom paint.

615. CATHODIC PROTECTION.

615.1. Zincs anodes on transom and shafts.

615.2. Zinc anodes on all machinery as required.

616. DECK COVERING.

616.1. All deck coverings comply with IMO FTP parts 2 and 5.

616.2. Wear resistant tile installed in Pilothouse, passageways, Mess and lower deck berth spaces.

616.3. Upper deck berth spaces are carpeted meeting MIL-STD-1623 and IMO 2000 HSC.

616.4. Galley, sanitary spaces and working spaces are covered with polymeric flooring meeting MIL-PRF-24613.

616.5. Exterior non-skid.

617. THERMAL AND ACOUSTIC INSULATION.

617.1. Standard: ABS *Guide for Building and Classing High Speed Craft*.

617.2. Standard: IMO *2000 HSC* Structural fire protection for vessels greater than 500GT.

617.3. Structure tested to IMO *Fire Test Procedures Code.*

617.4. Structural Fire Protection Material: Design approved Isover Ultimate and XFire Firebarrier.

617.5. Fire Restricting Material: Type approved XFire FRM.

618. SHEATHING.

618.1. Aluminum sheathing in heads and showers.

618.2. Perforated aluminum sheathing in machinery compartments MMR.

618.3. Bulkheads and overhead in galley sheathed in stainless.

619. INTERIOR FURNISHING.

619.1. Standard: ABS *Guidance for Crew Habitability on Ships*.

619.2. Standard: ASTM F1166-07 *Human Engineering Design for Marine Systems, Equipment and Facilities.*

619.3. Mixed gender accommodations for (4) Officers/CPOs and (18) enlisted crew.

619.4. Décor by in house designer.

619.5. **Forward Staterooms.** (LOC: Main Deck starboard)

619.5.1. (2) Staterooms with (1) rack each.

619.5.2. Lockable storage under rack.

619.5.3. Berth reading light and VAC outlet.

619.5.4. Desk with bookshelf, file cabinet and chair.

619.5.5. LAN connection.

619.5.6. Lockable hanging and storage locker.

619.5.7. Waste basket.

619.5.8. Clothes hook.

619.5.9. Air conditioning outlet.

619.5.10. 22" LCD television with interface to shipboard entertainment, navigation and CCTV system.

619.5.11. Ensuite head with shower, stainless sink, soap dispenser, paper towel dispenser, VAC outlet and mirror.

619.6. **Aft Staterooms.** (LOC: Main Deck)

619.6.1. (2) Staterooms with (1) rack each.

619.6.2. Lockable storage and file cabinet under rack.

619.6.3. Berth reading light and VAC outlet.

619.6.4. Desk with bookshelf and chair.

619.6.5. LAN connection.

619.6.6. Lockable hanging and storage locker.

619.6.7. Waste basket.
619.6.8. Clothes hook.
619.6.9. Air conditioning outlet.
619.6.10. 22" LCD television with interface to shipboard entertainment, navigation and CCTV system.
619.6.11. Stainless sink, soap dispenser, paper towel dispenser, VAC outlet and mirror.

619.7. **Enlisted Berthing.** (LOC: Lower Deck)
619.7.1. (5) Berthing spaces to accommodate (18) crew.
619.7.2. Two tier racks with lockable storage under bottom rack.
619.7.3. Berth reading light and VAC outlet
619.7.4. LAN connection.
619.7.5. Lockable hanging and storage locker for each berth.
619.7.6. Waste basket.
619.7.7. Clothes hooks.
619.7.8. Air conditioning outlet.
619.7.9. Stainless sink, soap and paper towel dispensers, VAC outlet and mirror.

619.8. **Heads and Showers.**
619.8.1. Main Deck: (2) heads and showers.
619.8.2. Lower Deck: (3) heads and showers.
619.8.3. Head: Headhunter Royal Flush Military Bowl.
619.8.4. Sink: Stainless with soap and paper towel dispenser.
619.8.5. Mirror: Installed with VAC outlet.
619.8.6. Shower Stall: Composite with fire retardant resin and gel coat.
619.8.7. Shower Heads: Pressure balance valves and water saver heads.
619.8.8. Sealed shower light.
619.8.9. Shower curtain.
619.8.10. Exhaust fans in each space.

620. GALLEY.

620.1. Standard: ABS *Guidance for Crew Habitability on Ships.*
620.2. 220ft² (20.5m²) galley/dry stores space designed for 24 hour meal preparation.
620.2.1. Stainless sheathed bulkheads.
620.2.2. Stainless steel upper and lower cabinets.
620.2.3. Self-draining polymeric epoxy sole.
620.2.4. Stainless counters with searails.
620.2.5. (3) Warewashing sinks stainless steel.
620.2.6. Stainless food prep sink with sprayer.
620.2.7. Handwash sink.
620.2.8. Cleaning supply cabinet.

620.2.9. 100cf (.38m³) dry stores racks.

620.3. Appliances.

620.3.1. 36" range with griddle, hobs, convection oven and searails.

620.3.2. 50cf (.19m³) modular refrigerator.

620.3.3. 50cf (.19m³) modular freezer. – Move to Galley

620.3.4. Icemaker high output.

620.3.5. Dishwasher.

620.3.6. Trash Compactor.

620.3.7. 1.2cf Microwave oven.

620.3.8. Pots, pans and utensils.

620.3.9. Dishes and silverware.

621. MESS.

621.1. Capacity for 16 personnel.

621.2. Aluminum bench seating.

621.2.1. Upholstered cushions with storage underneath.

621.2.2. Tables with knockdown capability.

621.3. Stainless cabinet adjacent to galley.

621.3.1. Microwave oven and (2) coffee pots.

621.3.2. Storage locker.

621.3.3. Handwash sink.

621.3.4. Soap and Paper Towel dispensers.

621.4. (3) 32" LCD HD televisions with AV equipment.

621.5. Medical equipment locker.

621.6. Magazine racks.

621.7. Condiment racks.

621.8. Eye wash.

622. MEDICAL EQUIPMENT.

622.1. First Aid boxes in Mess, Main Deck, Pilothouse, and ECC.

622.2. Triage station in Mess.

622.2.1. Medical equipment locker with supplies.

622.2.2. High intensity lighting.

622.2.3. Oxygen supply.

622.2.4. Communication system.

623. LAUNDRY.

623.1. Front loading ultra capacity washer.

623.2. Front loading ultra capacity dryer.

623.3. Linen cabinet.

624. PILOTHOUSE.

624.1. Conning, Maneuvering and Observing Stations.
624.1.1. Aluminum console with space for engine and navigation equipment.
624.1.2. (3) Alutec helm chairs
624.1.3. Binocular stowage.
624.1.4. Gimbaled cupholders.
624.1.5. Grab handles.
624.2. Route Planning Station.
624.2.1. Chart table with large flat.
624.2.2. Chart light, drawer storage for charts and equipment.
624.2.3. Electronic equipment racks.
624.3. DCS.
624.3.1. Desk with built in file drawers and chair.
624.3.2. Aluminum console for damage control equipment.
624.4. Communications Station.
624.4.1. Desk with built in file drawers and chair.
624.4.2. GMDSS equipment rack.
624.5. Book shelf.
624.6. Coffee station.
624.7. Storage lockers.

625. WORKING SPACES.

625.1. Collection Holding and Transfer (CHT).
625.1.1. MSD system.
625.1.2. Bowthruster.
625.1.3. Water heaters.
625.1.4. Transformers.
625.1.5. Air conditioned.
625.1.6. Access from Lower Deck and emergency escape to forward crew berth space.
625.2. ECC.
625.2.1. Desk with stool.
625.2.1.1. Storage lockers
625.2.1.2. Bookshelf for manuals.
625.2.2. Main switchboard.
625.2.3. 24VDC switchboard.
625.2.4. Hanging locker.
625.2.5. Access from MMR and from main deck.
625.3. MMR.
625.3.1. Fuel transfer station.
625.3.2. Access from AMR and port and starboard equipment rooms.

625.4. AMR.
625.4.1. Workbench with vise.
625.4.2. Toolbox with tools.
625.4.3. Spare parts lockers.
625.4.4. Sink with hot/cold water.
625.4.5. Air conditioned

626. CONFIGURABLE SPACES.

626.1. Main Deck.
626.1.1. Two spaces can be configured to CIC, radio room, mission planning room, wardroom, armory, additional berths/staterooms, storage or other customer-specified space requirements.
626.1.1.1. 130ft² (12m^2) configurable space (aft).
626.1.1.2. 46ft^2 (4.27m^2) configurable space (forward).

627. STOWAGE SPACES.

627.1. PFD and immersion suit locker on main deck.
627.2. Firefighting locker on main deck.
627.3. Boatswain's locker on foredeck.
627.4. Cleaning gear lockers on foredeck.
627.5. Port equipment space.
627.5.1. Aft of MMR.
627.5.2. Transformers.
627.5.3. Storage lockers.
627.6. Starboard equipment space.
627.6.1. Aft of MMR.
627.6.2. Emergency steering station.
627.6.3. Storage lockers.
627.7. Port aft space.
627.7.1. Tow hawsers reels.
627.7.2. Shorepower cords.
627.8. Starboard aft space.
627.8.1. Garbage stowage.
627.8.1.1. Mechanical ventilation.
627.8.1.2. 5 metal garbage cans.

628. ONBOARD SPARE AND LOOSE PARTS.

628.1. Engine spares.
628.2. Generator spares.
628.3. Filters for all items.
628.4. Fluids.

628.5. Fuses, bulbs.
628.6. Fasteners.
628.7. Bromine, chlorine.
628.8. Tools (hand).
628.9. Tools (special).
628.10. Linen, pillows and blankets.
628.11. Waste baskets.
628.12. Garbage cans.
628.13. Dishes, silverware, and cups.
628.14. Pots, pans and utensils.
628.15. Medical equipment.
628.16. (4) First aid kits.
628.17. (25) Life vests.
628.18. (10) Lines/ (8) fenders.
628.19. (2) Tow hawsers.
628.20. (6) Throw rings with lines (2) with smoke and lights.
628.21. Line throwing device.
628.22. Day light signaling lamp.
628.23. SART.
628.24. Parachute flares.
628.25. Potable water hose.
628.26. Cleaning gear.
628.27. RHIB safety gear.
628.28. (3) Binoculars US Navy standard.
628.29. (5) Handheld VHF radios.

700. ARMAMENT

701. MAIN GUN.

701.1. Location designated for (1) main gun mount.
701.2. Space allocated for main gun remote operator console.

702. MACHINE GUNS.

702.1. Locations designated for crew-served machine gun mounts.

Notice: The Exportation of GRC43 is subject to U.S. export regulations and depending upon its design modifications for specific uses, the exportation may require prior written consent by the United States Government.