Section VII.
Technical Specifications

STATEMENT OF COMPLIANCE
TO TECHNICAL SPECIFICATIONS

The bidder must state in the last column **"Comply"** or **"Not Comply"** against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "**Comply"** or **"Not Comply"** must be supported by evidence in a Bidders Bid and cross-reference to that evidence. Evidence shall be in the form of manufacturer's brochures, un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, sample, independent test data etc., as appropriate for the following major equipment and systems*:

1.Main engines and generators for landing docks and LCU.
2.Bow Thruster
3.Platform Management System
4.RHIB
5.Navigational System
6.Downlink Receiver System
7.Integrated Communication and Control System
8.Electronic Chart Display System
9. All Radio Communications equipment
10. .50 Caliber Machine Gun
11.Helicopter Traversing System
12. Tactical Air Navigation (TACAN)

* The bidders must make reference to only one / single brand

A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented for the above listed major equipment and systems will render the Bid under evaluation liable for

rejection. A statement either in the Bidders statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the provisions of **ITB** Clause 3.1(a)(ii) and/or **GCC** Clause 2.1(a)(ii).

CLARIFICATION AND SETTLEMENT OF CONFLICTING INTERPRETATION OF THE TECHNICAL SPECIFICATIONS

All clarifications regarding the technical specifications stipulated in this section will be clarified by the members of the Project Management Team/Technical Working Group; the Philippine Navy **Landing Dock Acquisition Project** Technical Specifications will be referred to. In cases of conflicting interpretations, the nature and purpose of the equipment will be the basis of interpretation. The main basis for technical specifications and requirements is the nature and purpose of the equipment and its intended use as determined by the doctrinal application of the end-users represented herein by the **Project Management Team/Technical Working Group.**

ITEM	SPECIFICATIONS		STATEMENT OF COMPLIANCE
1	**Landing Dock Vessels**	**Two (2) units**	
		New Construction	
2	**CAPABILITIES**		
	Able to operate from the territorial sea to the Exclusive Economic Zone (EEZ) and up to the continental shelf, as needed. International Engagements will also be part of its mandate. As such, the LPDs must be able to operate in foreign waters.		
	To provide amphibious capability, sealift and sea basing of one PMC battalion conducting amphibious operations and for additional helicopters and AAVs.		
	Able to cover a radius of at least 300 NM within 24 hours and could also provide a long- range deployment at least 9,000 NM.		
	Can sustain operational presence at sea for a minimum of 30 days in tropical conditions.		
	Able to operate up to Sea State 6 (wave height maximum of 6 meters) in accordance with the World Meteorological Organization (WMO) Sea State Code.		
	Each vessel can able to quickly launch and recover the following: • a minimum of two (2) Rigid Hull Inflatable Boats (RHIB) from and to the cradle, • AAV from and to the well deck and side ramps, and • a minimum of two (2) Landing Craft Utility (LCU) from and to the well deck or two (2) MPAC MKIII from and to the cradle.		

	Able to accommodate at least two (2) medium lift helicopters up to 10 tons		
	Able to accommodate in an onboard hangar at least a medium lift helicopter up to 10 tons		
3	**PRINCIPAL DIMENSIONS AND CHARACTERISTICS**		
	Length Overall	at least 120 meters	
	Breadth	at least 21 meters	
	Displacement	at least 7,200 tons (payload compliant)	
	Draft	Function of design	
	Operating Environment	➢ Able to operate at Sea State 6 ➢ Helicopter Operations at Sea State 4 ➢ LCU Operations at Sea State 4 ➢ RHIB Operations at Sea State 4 ➢ MPAC MKIII Operations at Sea State 4 ➢ AAV Operations at Sea State 4	
	Complement	Crew: 18 Officers (6 females), and 120 EP (10 females) Non-organic: 1 VVIP, 8 VIP, 5 Task Force Personnel, 7 Air Crew, 5 Medical Crew, 8 SPECOPS, 8 MPAC Crew.	
4	**PERFORMANCE**		
	Speed	Cruising speed should not be less than 13 knots and maximum speed should not be less than16 knots at full load and capable of operating safely at Sea State 6 (4-6 meters wave height by World	

		Meteorological Organization Sea State Scale).	
	Range	Minimum operating range should be not less than 9,000 Nautical Miles without refueling.	
	Maneuverability	The vessel is to be fitted with twin rudders of suitable size and shape sufficient to effect a complete turn five times the length of the ship as the maximum tactical diameter. The Landing Dock shall be designed, constructed, and fitted out with a steering arrangement compliant with IMO conventions to ensure the safety of the crew.	
		The ship should be controllable and capable of performing maneuvers essential to its safe operation up to critical design conditions.	
		Turning circle: The Landing Dock shall have a tactical diameter not longer than five (5) ship lengths in either direction at maximum speed.	
	Sustainability	Provision for organic crew of 138 for at least thirty (30) days. Provision for 42 embarked passengers (VVIP, VIP, Task Force Personnel, Air Crew, Medical Crew, SPECOPS, MPAC Crew) for at least thirty (30) days Provision for an additional 500 troops for at least fifteen (15) days. Messing spaces for 200 troops at a time (100 crew, 100 troops/embarked passengers) and wardroom	
	Environmental Conditions	The ship shall be able to operate satisfactorily under the following conditions: <u>Performance Requirement</u> <u>Ambient Conditions</u> Air Temperature -10˚C to 45˚C	

		Sea Water Temperature -2.2˚C to 32˚C Relative Humidity 10% to 100%	
5	**MPAC MKIII OPERATIONS/SUPPORT**		
	a. The vessel shall have two (2) collapsible cradles on board that can accommodate two (2) Multipurpose Attack Crafts MKIII. MPAC MKIII Specifications: • Length: 17.0 m • Beam: 4.76 m • Draft: 0.92 m • Displacement: 32.0 T		
	b. The vessel shall be capable of conducting MPAC MKIII deployment and retrieval operations up to Sea State 4 (1.25 to 2.5 meters wave height).		
	c. The vessel shall also come with: • Missile Storage Facility Provision for storage of at least twenty-four (24) Spike ER rounds with container. Each wooden container has the following technical data: Container weight: 41kg Container + round: 76 kg Length: 181 cm Width: 39 cm Height: 52 cm Round environmental conditions for Logistic Storage: Mean Temperature: 5° to 25°C Extreme Temperature: 0°C to 35°C Mean Humidity: 50 to 70% Extreme Humidity: 20 to 95% Facility: Ventilated, Sun and Rain protected Storage period: Not limited by Safety reasons		

	d. Indoor Dehumidifier shall be required with appropriate Air Conditioning Unit.	
	e. As much as possible, the storage facility is near the location of the MPAC with the same deck level for accessibility purposes.	
	f. Trolleys and Forklifts can be accommodated to carry and transport pallet loaded with missile containers.	
	g. Gas Supply Unit (GSU) Storage Facility • Provision for Gas Supply Unit (GSU) • Each equipment requires a fix rack with a safety harness • There should be enough space surrounding the equipment and personnel passage • Room Environmental Conditions for Gas Supply Unit (GSU): Mean Temperature: 10° to 40°C Mean Humidity: Less than 80% RH Facility: Free of oil and chemical vapors, well ventilated room Room dimension: at least 3x3 meters • The Gas Supply Unit (GSU) storage facility must be able to accommodate the following equipment and be provided with separate power sources of 220V: One (1) Gas Compressor Unit (GCU) Weight: 260 kg Length: 150 cm Width: 80 cm Height: 90 cm One (1) Air Compressor Unit (ACU) Weight: 280 kg Length: 160 cm Width: 70 cm	

	Height: 110 cm One (1) Gas Purity Tester (GPT) One (1) Gas Battery Composed of Eight (8) Nitrogen each Tank Weight: 63 kg Length: 140 cm Width: 24 cm Height: 6 ft	
6	**LCU OPERATIONS**	
	a. The vessel shall have a well deck with provisions to accommodate two (2) Landing Craft Utility (LCU).	
	b. The vessel shall be capable of conducting LCU deployment and retrieval operations up to Sea State 4.	
	c. The well-deck shall be equipped with the following: • Water-tight stern opening access ramp capable of supporting at least three tons per square meter (3 ton/m^2), • At least two (2) ton well-deck hoist, • LCU refueling system.	
	d. Principal Dimension and characteristics The Landing Craft Utility (LCU) shall have the minimum principal dimensions and characteristics. • Overall Length- more or less 23 meters • Breadth – more or less 5.5 meters • Draft (moulded) – maximum 2.8 meters • Speed – at least 20 knots • Payload capacity ▪ Cargo – at least 18 tons, or ▪ Personnel – at least 80 personnel with equipment and	

	full battle gear • Cruising range – at least 180 nautical miles • With at least two diesel generators each capable of supplying LCU power requirement	
	e. General Outfitting Equipment The Landing Craft Utility (LCU) shall at least have the following general outfitting equipment; • At least two (2) units diesel generators each with capacity sufficient to provide electric power requirements of all systems onboard, • Standard navigation and communication equipment, • Hydraulic/ electric 20- ton watertight bow ramp, • Bow ramp winch and motor, • Cargo deck lashing lugs, • Portable frame canvass awning cargo deck aft, • Ten (10) Portable ball PVC Fenders, and • Two (2) .50 cal guns for Port/Starboard with mount (including Ready Store Lockers (RSL).	
7	**RHIB OPERATIONS**	
	a. Two (2) Rigid Hull Inflatable Boats (RHIBs) are for light load deployment without the use of the stern ramp. The vessel shall be capable of launching and retrieving Rigid Hull Inflatable Boats (RHIBs). The vessel, shall likewise be equipped with corresponding davits than can support at least 15-tons.	
	b. The vessel shall be capable of conducting RHIB deployment and retrieval operations up to sea state 4.	
	c. RHIB Principal Dimensions and Characteristics The Rigid Hull Inflatable Boat (RHIB) shall have the minimum principal dimensions and characteristic. • Overall Length – more or less 8.5 meters • Breadth – more or less 2.8 meters • Weight o Full load – 3.5 tons	

	○ Light load – more or less 2.5 tons • Inboard/ Outboard Engine – stern drive, diesel Speed • Cruising - at least 30 knots • Maximum – at least 45 knots • Fuel Capacity – at least 500 liters	
	d. General Outfitting Equipment The Rigid Hull Inflatable Boat (RHIB) shall at least have the following general outfitting equipment. • Console for helmsman and two (2) crew, • Navigation radar, • Global Positioning System (GPS), • 2X3- men Jockey seats, • Foldable radar Frame • Manual Bilge Pump • Heavy duty Inflatable collar, • Navigational Lights, • Inflation Bellows, • Non – slip deck Finish, • Watertight under – deck locker, • Four (4) Lifting slings, • Anchor and anchor warp, • Water resistant switch panel and electric system, • VHF Marine Band Radio (Base) and • One (1) .50 Cal gun mid/fore mount (including mounting plate and Ready Service Locker [RSL]).	
8	**HELICOPTER OPERATIONS/SUPPORT**	
	a. The vessel must have a flight deck at the aft for helicopter operation of two (2) medium lift helicopters (not included) capable of operating night and day. There shall be a hangar and control room, facing and directly in front of the flight deck.	
	b. The vessel must be capable of conducting Helicopter launching and recovery operations up to Sea State 4.	
	c. The vessel must be equipped with standard and proven flight deck and hangar facilities, navigational aid system compatible with NVG, refueling system, helicopter traversing system compatible for AW109, AW139, AW159 and other medium lift helicopters, aviation firefighting system, electrical supply system and fluid and gas supply systems such as compressed air nitrogen, Jet-A1 fuel,	

	distilled and fresh water.	
9	**SPIKE NLOS TORPEDO ROUNDS AND 2.75 INCH AERIAL ROCKETS STORAGE ROOM**	
	a. The vessel shall have a room able to accommodate at least twice (2x) the basic load (48 all in all) for SPIKE NLOS rounds and pallets for long term storage. In the same manner, it shall also be able to accommodate twice (2x) the basic load (48 all in all) for 2.75 inch Aerial Rockets. It shall be of adequate space and support utilities, in order to perform related rounds and long term storage activities.	
	b. Storage room dimensions should comply with DOD 4145.26-M. Entrance shall have enough clearance to carry in a pallet using a small battery operated forklift (not included).	
	c. The room shall be sun and rain protected and shall have the following Environmental Conditions: • Temperature: 5 deg to 25 deg Celsius • Relative Humidity: 50% to 70% • Air Pressure: 860-1080 mbar • Illumination: 300-500 Lux	
10	**HELICOPTER LANDING (FLIGHT DECK)**	
	a. Able to accommodate two (2) medium lift helicopters with weight up to 10 tons at flight deck and 10 tons at hangar.	
	b. Flight deck dimension should safely accommodate at least two (2) AW139 helicopters at any one time.	
	c. The flight deck should be provided with suitable helicopter tie-down points, lights, helideck markings and safety nets. The deck shall be fitted with flush locking cups to secure netting or lashing. The deck surface shall be coated with anti-skid covering and the free sides of the landing deck shall have hinged guardrails with safety nets.	

	d. Flight deck markings in accordance with Philippine Navy standard (PNM 3-02.12 Shipboard Helicopter Operations Manual).	
	e. Provided with a deck locking grid or landing grid helicopter securing system on the flight deck. The landing grid must be flushed on deck, and have machined and calibrated holes. The landing grid must be made of stainless steel and capable of withstanding tension of at least 15MT. The center of the landing grid to be aligned with the center of the touchdown circle.	
	f. Provided with a rail-less traversing system to safely secure the helicopter from the flight deck to the hangar.	
	g. Must be equipped with standard naval aviation firefighting facilities.	
11	**HANGAR**	
	a. Hangar dimension must be standard for an AW139 Helicopter.	
	b. Hangar must have a roller curtain type door able to safely accommodate an AW139 and an access door for personnel to traverse from flight deck to hangar and vice versa.	
	c. Hangar must be also equipped with: • Standard firefighting facilities • Standard AC/DC power supply • Standard fluid and gas supply • Standard deck link plates (deck pockets) capable of taking a load of at least an AW139 Helicopter in any direction as lashing points to secure the helicopter inside the hangar.	
12	**HELICOPTER SUPPORT EQUIPMENT**	
	The following support facilities and equipment must be installed for safe helicopter operations:	

	a. Standard Helicopter control station (day and night capable) equipped with but not limited to the following instruments/equipment: 1. Repeater for heading, speed, relative wind direction 2. Anemometer 3. Inclinometer 4. Controls for helicopter lighting systems and communications equipment.	
	b. Standard Navigational Aid System / Lighting and Visual Approach Equipment (NVG Compatible) equipment with but not limited to the following: 1. Utility lighting (white lighting) 2. Homing beacon (flashing white light) 3. Hangar wash floodlights 4. Maintenance floodlights 5. Stabilized Glideslope Indicator 6. Wave off light lighting system 7. Obstruction lights 8. Deck edge lights 9. Deck line-up lights 10. Extended line-up lights 11. Overhead floodlights 12. Deck Surface floodlights 13. Deck status light system	
	c. Tactical Air Navigation System (TACAN)	
	d. Flight deck fittings for helicopter tie down	
	e. Helicopter deck firefighting system capable of automatically detecting and extinguishing fire using fixed and mobile foams that includes as practicable: 1. Smoke and heat detectors	

	2. Hose reels 3. Foam injector controls 4. Portable fire extinguishers and 5. Other safety equipment	
	f. Helicopter deck fuelling/defueling system for Jet A-1 fuel with the following: 1. Two (2) AVCAT fuel tanks with at least 40,000 liters fuel capacity each 2. Hose reels 3. Pump controls 4. Filling, transfer and service system 5. Control and monitoring system 6. Local control panel 7. Pump and filter module 8. Necessary accessories	
	g. Helicopter External Power Unit (EPU)/Helicopter Starting System	
	h. Helicopter spare parts stowage locker and stowage of spares, etc	
	i. Flight deck crew's cranial helmets with ear muffs with hands free communication integrated with ICS. This is specifically to be used for Helicopter Operations as distinguished from other headset requirement.	
	j. Berthing spaces for at least 8 members of the Helicopter Crew	
	k. Standard Aviation Admin Office	
	l. Standard Aviation Shop	
	m. Standard Aviation Storage Room	

13	**AAV OPERATIONS**	
	a. The vessel shall have a Tank/ Truck Deck capable of loading and unloading Amphibious Assault (AAV) and other vehicles (*Not included)*.	
	b. The Tank/ Truck Deck shall be equipped with the following; • At least seven (7) meter-diameter, at least 40-ton load turn table, • At least 10-ton vehicle lift (from tank to Helideck), and • Refueling System.	
	c. The Tank/ Truck Deck shall likewise be fitted to accommodate (not included) Eight (8) Amphibious Assault Vehicles (AAV) with a total area of at least 800 square meters.	
14	**HULL FORM, LAYOUT, AND FINISHING**	
	a. The Hull form shall be generated from a proven design that passed extensive model tests in a renowned model basin. The vessel shall meet the intact stability and stability after damage requirements of Classification Society. Derivatives of existing Landing Dock designs are considered as long as it meets the PN capability requirements.	
	b. The hull, deck and superstructure shall be of mild steel. Likewise, high tensile steel shall be used for the tank / truck and heli decks. Scantlings and other structural members shall be in accordance with the Classification Society Standards (refer to Lloyd's/ABS/BV/DNV-GL).	
	c. The hull shall be subdivided into transverse watertight bulkheads that could withstand damage and flooding in any two (2) adjacent watertight compartments, and would remain floating at its floodable length.	
	d. The hull structure shall have particular emphasis on survivability, structural integrity, logical general arrangement, optimized speed-length ratio, beam-draft ratio, and improved structural continuity to	

	minimize vibration.	
	e. Thermal insulation shall be placed in compartments characterized by high temperature. Underwater radiated noise shall also be minimized through the use of resilient mountings, low noise producing equipment, and innovative design of hull, propellers and appendages.	
	f. The height of the mast shall be a function of the ranges of sensors, safety, and stability. The vessel should have at least one navigation mast with sufficient space and strength to accommodate navigation radar scanners, halyards and riggings, navigation lights, aerials, air search radar, weapon sensors and communication antennas.	
	g. The vessel shall have additional physical spaces for the installation of the following future capabilities: 76mm gun, 30mm guns, decoy launching system, CIWS, Hull Mounted Sonar.	
	h. Painting scheme of the vessel's hull and structure shall satisfy Philippine Navy standards with appropriate corrosion protective measures and bio-fouling protection (ICCP and MGPS).	
	i. The underwater hull plate and structures shall be applied with epoxy paint top-coated with flouropolymer foul release coating anti-fouling paint or any similar paint that is designed to last for at least five (5) years. Internal floorings, ceilings bulkheads and pipe work paint and markings shall be in accordance with existing Philippine Navy standards.	
	j. Non-skid finish shall also be made on all-weather decks to include truck deck adjacent to the well deck using anti-skid paint.	
15	**TANKS**	
	a. The fuel oil (FO), freshwater (FW) and ballast tanks shall be provided with bolted manhole covers, filling pipe, and de-aeration pipe and sounding pipe as necessary.	
	b. Tank capacities (FO, FW, Ballast and Lube Oil) shall be able to meet the required endurance, range and stability of the vessel.	

	c. Separate fuel oil daily service tanks may be fitted in the engine room with the necessary fittings and overflow pipes to the main storage tanks.	
	d. The vessel shall have separate fresh water tank for technical and potable water storage. At least two (2) potable fresh water tanks shall be constructed with a combined minimum capacity equal to the peak consumption or three times the daily normal requirement. On the other hand, bilge water/dirty oil/sludge collection tanks shall be integrated in the engine room double bottom construction for collection of bilge water, dirty oil and sludge.	
16	**ACCOMMODATION**	
	a. The vessel shall have adequate accommodations for the crew. It shall also provide accommodations for an additional 40 embarked passengers (VVIP, VIP, Task Force Personnel, Air Crew, Medical Crew, SPECOPS, and MPAC Crew).	
	b. An additional troop accommodation standard shall be provided for one (1) embarked marine battalion (500 troops).	
	c. A VVIP Suite for one VVIP shall be provided, likewise the Commanding Officer, Executive Officer, embarked Senior Officer shall be provided each with a private cabin, with separate bedroom and private toilet and bathing facilities. The accommodation for the VVIP and the Commanding Officer shall be provided each with a receiving area. The embarked and organic Junior Officers will be provided with cabins preferably with private or shared toilet and bathing facilities.	
	d. Petty Officers shall be provided with cabins with shared toilet and bathing facilities, while the other enlisted personnel will be berthed in common billeting areas with a shared toilet and bathing facilities but segregated by gender.	
	e. Crew (to include embarked personnel) accommodations shall be provided with spaces for the storage of clothing and other personal items of both officers and enlisted personnel. All cabins shall be provided with a minimum of one (1) desk and one (1) chair that can be secured and fastened to the deck. All fixtures, as far as	

	practicable, should be permanently secured to the deck.		
17	**PROPULSION AND AUXILIARY MACHINERIES (Minimum)**		
	Propulsion System	a. The propulsion system shall be designed and installed in accordance with Classification Society Rules.	
		b. The vessel shall be fitted with two Main Propulsion Diesel Engines with two (2) counter-rotating Controllable-Pitch propellers each driven by a reduction gear box.	
		c. The propulsion system to be fitted shall be able to power the vessel to a cruising speed of not less than 13 knots and can attain a speed of at least 16 knots at full displacement (7,200 tons).	
		d. All propulsion machineries can be operated using commercially available diesel fuel. The engines shall be fitted with adequate safety monitoring and controlling devices for speed, temperature, pressure and other operational functions.	
		e. The machinery installation should be suitable for operations as an unmanned machinery space, including fire detection, bilge alarm, and remote machinery instrumentation.	
		f. The engines should be protected against over-speed, loss of lubricating oil pressure, loss of cooling in medium to high temperature, malfunction of moving parts, and overload. Safety devices should not cause complete engine shut- down without prior warning, except in cases where there is a risk of complete breakdown or explosion.	
		g. The major components of the engines should have adequate strength to withstand the thermal	

		and dynamic conditions of normal operation. The engines should not be damaged by a limited operation at a speed or temperature exceeding the normal limits but within the range of protective devices.	
		h. The propulsion system shall have provision for local operating control (MCR) and bridge control.	
		i. A bow thruster shall also be provided.	
	Ship Service Diesel Generators	a. The vessel shall have at least four (4) ship service diesel generators (SSDGs). Each main diesel generator, by itself, shall be able to provide ship power requirements for all ship systems (excluding weapons, bow thruster and half of the fire main system) at 80 % of its load capacity used.	
		b. SSDGs shall be capable of parallel operation such that the three (3) generators in parallel operation must be able to satisfy the power requirements of all ship system to include future capability upgrade (76mm gun, 30mm guns, CIWS, Decoy Launching System, Air Search Radar, Hull Mounted Sonar, etc) at any one time.	
		c. The main switchboard shall be co-located at the Machinery Control Room (MCR) and consists of the vessel's mains supply section with: • Diesel Generators • Shore Connection • Interconnection to Emergency Switchboard • Distribution (subdivided over two sections)	
		d. Emergency generator shall be capable of providing power to basic navigational lights, ship ventilation, fire and bilge pumps, navigational systems, steering and propulsion system with 20% of the load capacity unused.	

		e. A load shedding/load sharing system or power management system shall be installed to prevent an SSDG being overloaded before another SSDG is available for loading and ensures the continued availability of power to vital services within the ship.	
		f. All diesel generators can be operated using commercially available diesel fuel.	
	Electrical System	The electric power generation, distribution and utilization system shall be designed to provide maximum reliability and continuity of power to all service essential to vessel's major function, and shall be installed in accordance with Classification Society Standards (refer to Lloyd's/ABS/BV/DNV-GL).	
	Distribution System	a. The vessels power distribution shall be designed, constructed and fitted-out such that power is generated and distributed from the power generating plants at 440 VAC (nominal), non-earthed, 3-phase system with neutral conductor alternating current to meet the following requirements applicable to various units of equipment as follows; • 440V 3 phase 60 Hz for all electrical power equipment; • 115V single phase 60 Hz for the special lighting distribution system; • 440/115V 3 phase 400 Hz for electronics, weapons control and other equipment; • 240V single phase 60 Hz for normal lighting system, medical equipment, 240V amenity sockets in living spaces, electronic maintenance areas and offices complete with protection from electric shock; • 24VDC for some escape lighting, engine control and other important control, monitoring, navigation and emergency radio; • 115/200V 400 Hz for helicopter servicing;	

		and • 28VDC for helicopter maintenance and starting.	
		b. The vessel shall have at least two shore connection boxes (one portside, one starboard side) designed to relay 440V 3 phase 60 Hz, 1200 A, to shore, or from shore. The vessel shall be equipped with at least a 150-meter length 3-phase wires for the vessel to shore/shore to vessel AC System power connection, properly installed with Ground Fault Circuit Interrupters (GFCI). The vessel to shore plug connector should have a locking cover and is insulated from the hull with a rubber gasket.	
		c. Onboard electrical cables shall be constructed, selected and installed according to applicable International Electrotechnical Commission (IEC) standards. Cables shall be of the flame retardant type, as required by regulations. Distribution cables shall be of the standard marine and halogen free type. Cables on sub-supplier equipment shall be of manufacturers' standard. However, it shall comply with IEC standards. Special (not standard available) cables for Government Furnished Equipment shall be supplied by the Owner. Cable bundles shall be fixed onto the trays by means of standard cable bundle strips (tie-wrap or equivalent). Cable type shall be in accordance with the specifications of system manufacturer(s) of the connected equipment and at least to be in accordance with the marine type cable requirements specified above.	
		d. Cable markings shall be according to Classification Society standards (refer to Lloyd's/ABS/BV/DNV-GL). Cables of delivered equipment (skid mounted) shall be coded and marked according to equipment supplier's standard. Distribution panels shall have information plates adjacent to the handle of each	

		circuit breaker or switch with the circuit number, name of controlled circuit or apparatus and the location of the apparatus.	
		e. The vessel shall have a casualty power system for use in the event of major damage to the normal and standby distribution system. These includes casualty power socket and power cables which enables the power to be provided to systems vital to ship survivability to include but not limited to the following: medical, steering gear, salvage pumps and fire pumps. Power to casualty power sockets shall be provided from designated load centers through permanent risers.	
	Lighting System	a. The ship lighting system shall be comprised of the following: • General main lighting - covering all lighting fitted for all normal lighting operations. The arrangements for changeover to red lighting for night vision, as well as door switches for 'Darken Ship' operations shall be installed on the bridge, interior passageways and operations area in accordance to Class Rules • Standby lighting – shall include both red and white 24VDC fittings, which shall be fed from a 24VDC uninterruptible supply (UPS). Standby lighting is illuminated at all times. This lighting provides the necessary illumination for work in some compartments and provides illumination of escape routes to the upper decks. • Exterior lighting shall be provided with tube lighting fixtures and floodlights. The vessel shall also be provided with a control system that will allow control of all exterior lightings, passageways, corridors and staircases in accordance with Class Rules. • Special lighting – shall include but not	

		limited to navigation lighting, weather deck lighting, replenishment at sea (RAS) lighting, power outlets for underwater lighting (anti-sabotage), ceremonial lighting, boat station and gangway lighting, port and starboard and flight deck and helo visual landing aids.	
		b. Lighting fixtures illumination level shall be in accordance with NAVSEA Habitability Criteria.	
		c. General lighting fittings in accommodation spaces, passageways, working spaces, and other regularly used compartments shall use CFL tubes or bulbs.	
18	**AUXILIARY EQUIPMENT (Minimum)**		
		The vessel shall have appropriate auxiliary machineries and systems to comply with the requirements of the Classification Society Rules, International Maritime Organization (IMO) safety and environmental regulations, and other pertinent regulations that will impact on commercial port and harbor operations and activities.	
	Fire Fighting and Detection	Fire Detection System shall include sufficient number of heat and smoke detectors. The Fire Fighting System shall be capable of extinguishing all class of fire including A, B, C, D, and K fires. The system shall include the following minimum equipment/accessories: • Water (water mist) sprays (fixed) • Sea water hydrants (fixed) • AFFF extinguishers (fixed and portable) • CO2 extinguishers (fixed and portable) • Potassium Bicarbonate (PKP) (portable) • Aqueous Potassium Carbonate (APC) (fixed) • Fire stations and hydrants Automatic fire extinguishing system shall be	

		installed for vital spaces (engine rooms, ammo rooms, control spaces). The vessel shall also be provided with fireman's equipment such as air breathing apparatus sets with fire suits (three (3) fire teams, two (2) sets per fire team), and CABA charger. Main and emergency Fire Pumps shall be provided in accordance with Classification Society Rules	
	HVAC	A centralized Air conditioning system appropriate for tropical environment and temperate conditions (see environmental condition) shall be provided. The system shall include a redundant chilled water plants and sufficient air handling units. Air-conditioned areas include all living spaces, command and control, and vessel control areas. The climate control systems shall be provided to control the air temperature and relative humidity within satisfactory limits. Machinery Space Ventilation Systems shall be provided wherein air-conditioning units are impractical. Ventilation system of the machinery room spaces shall be independent.	
	Steering Gear System	The vessel shall be equipped with an electro-hydraulic or similar type steering gear system (with a redundant system) with appropriate rudder angle indicators. Steering shall be possible through remote or local automatic control as well as local manual control	
	Compressed Air System	Function of conduct of operations and in compliance with Classification Society Rules	
	Lube Oil and Fuel Oil Purifiers	Function of conduct of operations and in compliance with Classification Society Rules	
	Fresh Water System	The vessel shall have a fresh water production capacity adequate to provide feed water and other non-habitability requirements as follows:	

		• 182 liters per ship's company accommodation, per day, of fresh water of satisfactory quality to support habitability, domestic and personal hygiene purposes • 455 liters per day per helicopter for wash down. • 190 liters per day for cooling water system make-up. Two (2) reverse osmosis plants shall be provided; one shall be equal to required design capacity and the second shall be a full redundant plant. As an alternative, three plants of equal capacity each may be provided, such that with one plant secured, the remaining two plants have a combined capacity equal to or greater than the required design capacity. Water heaters shall be provided sufficient to ensure an adequate supply of hot water at all washbasins (galley, pantry, scullery, laundry, and medical and dental spaces) and showers and shall include a system which ensures a hot water supply to showers and washbasins within 10 seconds. Water heaters supplying washbasins and showers shall not support work spaces that have higher water temperature requirements. A Water purifier system with dedicated tank for drinking water, completely independent from freshwater hydrophore that supplies all other freshwater needs shall also be provided.	
	Bilge and Ballast System	Function of conduct of operations and in compliance with Classification Society Rules	
	Environmental Systems	The vessel should be equipped with environmental protection system and shall include but not limited to the following: • Sewage Treatment system with capacity sufficient to treat the complements wastes • Oily-water treatment system	

		• Garbage compactors • Incinerators • Ballast water treatment All environmental protection equipment/system shall be compliant with applicable IMO/MARPOL Annexes.	
	Platform Management System	The vessel shall have a centralized monitoring and controlling systems for main and auxiliary engines, Petroleum, Oil and Lubricants (POL), ballast water, and fresh water with a remote station preferably at the bridge. There shall likewise be a control switchboard for manual/ local control of all machineries. As part of this centralized monitoring system, the builder shall provide both hardware and a commercial and/or proprietary software platform management system. The intent of this platform management system (PMS) is to integrate the different systems that belong to the platform and allows their control and monitoring in order to provide a high level of automation in order to reduce the number of crew. The PMS shall control and monitor the following: • Battle Damage Control (with event kill cards) • Propulsion Plant • Steering and Bow Thruster Systems • Electrical Plant • Fire Detection and Extinguishing System • Bilge, Ballast, and Fresh Water System • Fuel, Hydraulic and Lube Oil Control System • Alarm System • Climate Control System (Ammo Storage, CIC, MCR etc.) PMS work stations shall be located on the MCR with repeater stations at each DC Stations and Bridge.	

	Anchoring and Mooring System	The vessel shall be provided with two (2) bow anchors and anchor chains corresponding to its displacement. The chains are to be stowed in chain lockers located at the forepeak. Anchors should be provided with a small floater and a 50m line. Chain stoppers shall likewise be provided to relieve the anchor winch from holding the chain when anchored. An anchor windlass, which is remotely operated at the forecastle, shall also be provided as part of the vessel requirement. Capstans, shall be provided that shall have sufficient brake power for mooring the vessel. The following deck equipment shall also be included: Chain Bin, mooring winch, bollards, cleats, rope reels, rope bins, anchor roller and gangplank/brow. All hawsers, steel wires, mooring ropes, rat guards, and those required by naval operations shall be provided by the builder. The ship shall also be fitted with appropriate mooring bitts for smaller vessels coming alongside.	
	Replenishment at Sea	The vessel shall be provided with appropriate fittings, tools and equipment that will allow the vessel to conduct replenishment at sea in accordance with PN regulations and/or NATO standards. (STANAG 1065 “Replenishment at Sea.ATP-16(B)”). It shall also be provided with a system for the delivery of POL and water to other PN vessels.	
19	**SPACES AND STORAGE (Minimum)**		
	The vessel shall be arranged for safe and efficient movement of crew and stores. It shall have the following minimum spaces for crew operations and storage. As far as practicable, all furnishings provided in the spaces mentioned shall be permanently secured and, if not		

	possible, provided with fittings that shall allow it to be secured. Internal deck coverings or floorings, ceilings bulkheads and pipe work paint and markings shall be in accordance with Philippine Navy standards. All spaces and storage shall be fitted with type approved insulation (glass wool) and wall paneling (as appropriate). Asbestos insulation is not allowed.		
	Combat Information Center (CIC)	The vessel shall have a CIC to accommodate weapons, navigation, combat and fire control system consoles. It shall have adequate storage for publications, charts and other similar items. It shall have space for multi-function consoles, large screen display for overall situational awareness, and tactical data table for plotting purposes of tactical data.	
	Task Force Operations Room	The vessel shall have a Task Force Operations Room which can accommodate a minimum of eight (8) persons. This room shall be primarily employed as a planning and combat area. The room shall be furnished with tables, seats and LED monitors for embarked Task Group personnel. It shall have access to voice, data, live video functionalities and tactical communications systems installed in the ship.	
	Radio Room	The vessel shall have a radio room that could comfortably accommodate radio transmitters, receivers and other equipment identified in the **Communications, Electronics, and Information System Provision** and the crew manning them. It shall likewise be provided with adequate equipment racks, furniture, power protection equipment, and with an uninterrupted power supply.	
	Medical Treatment Spaces	The vessel shall be provided with a medical space with bed for at least 6 persons and shipboard medical/dental equipment for and with the following use: • Role 1 Medical Care	

		• Type B Dental operations • Routine medical care for the crew • Medical cabinet for the safe stowage of controlled and basic medicines, a treatment bed and hospital beds	
	Small Arms Stowage	The vessel shall have sufficient and secured small arms storage (at least 500 M16 Rifles, 25 Cal .45, 25 9mm, and other firearms) placed in racks horizontally or vertically. It shall have a separate steel cabinet for small arms ammunitions storage. It shall also have blast-resistant airlocks and a controlled room temperature of minimum of 24 degrees Celsius. It shall have a sprinkling system including provisions to flood with seawater in an emergency. In addition, there shall be ready-use stowage (made of steel) on the bridge for rifles, signal pistol, ammunition and pyrotechnics.	
	Ammunition and Missile Storage	The vessel shall have a minimum of three (3) ammunition storage found near its weapon system or firing battery. It should be able to carry simultaneously, in accordance with PN regulations and policies, at least one (1) basic load each for the primary gun, CIWS and HMG, MPAC Missile, Helo rockets and torpedoes, and chaffs and decoys. It shall be placed in a well-protected compartments usually carried below the main decks. It shall have a sprinkling system including provisions to flood with seawater in an emergency. It shall have a lift or elevator for easy withdrawals and replenishment from the below deck to its firing battery. It shall also have blast-resistant airlocks and a controlled room temperature within 18-26 deg Celsius and 30-80% humidity. It shall have a sprinkling system including provisions to flood with seawater in an emergency. Similarly, it shall have a separate stowage space	

		for pyrotechnics and demolition equipment made of steel casing. (For Missiles and Torpedoes specific requirements, refer to MPAC/Helicopter support requirements)	
	Deck, Engineering and Other Storage	Storerooms with ample space and fitted with shelves (lockers and bins) will be provided. The following minimum stowage spaces shall be provided: • Spare Parts Store, • POL Store, • Linen stores, • General material stores, • Deck stores, • Paint and boatswains mate store, • Diving Gears • Rigid Hull Inflatable Boat (RHIB) • Spares stores and • Ship's Store.	
	Aviation Shop	The vessel shall have an aviation shop located adjacent to the hangar. It shall have an adequate space with adequate lighting and is provided with the following: • working table, • workbench with vise, • composite tool kit (CTK), • lockers for flight deck fittings and tie downs, • spare parts stowage locker, • special and common tools cabinet, • and flight deck crew clothing locker.	
	Ship Administration	The vessel shall be provided with a ship administration office outfitted with secure storage space for classified materials. It shall have an	

	Office	adequate working space as well as storage space for unclassified documents and other administrative supplies. It shall likewise have an adequate space provided with administrative equipment such as but not limited to; • computers with licensed OS, applications, antivirus software, • printer, • photocopier, • shredder, • binder, • bulletin board • desk and other office furniture and • file cabinet/storage.	
	Brig	The vessel shall be provided with a brig that can accommodate at least two (2) persons at any one time. It shall have a separate sanitary facility consisting of a toilet facility and a wash basin.	
	Mess and Lounge Facilities	The vessel shall have a VVIP wardroom, Officers' wardroom and lounge with pantry, a cafeteria style crew's mess hall with pantry and a separate troop's mess hall with pantry. The mess facilities shall be located, as much as possible, near galley services and respective cabins. The vessel shall have a Senior Petty Officer's lounge and a Seaman/Fireman's Lounge. Each of these lounges shall be provided by the builder with entertainment systems such as television sets and multi-media players.	
	Fitness Facility	The vessel shall have a fitness facility with basic fitness equipment.	
	Library	The vessel shall have a library for equipment manuals and other references to include	

		publications needed onboard.	
	Galley Facility	The vessel shall have a galley facility that is comprised of a main cooking area, preparation area, meat preparation area, and scullery (in a separate room). It shall have the following minimum equipment: • Sink table (stainless steel), • electric range, • convection oven, • microwave, • equipment table, • dishwashing machine, • mixer, • deep fat fryer, • bread toaster, • food-waste disposer, • refrigerator, • coffee maker, • hand-wash basins, • ice maker and • steam kettle. These equipment, as far as practicable, shall be securely fastened to the deck or other permanent fixture. A full complement of crockery and stainless steel cutlery shall be provided. To be provided by the builder are five (5) sets of quality stainless steel pots and lids of appropriate sizes.	
	Workshop Areas	The vessel shall have workshop areas for the basic repair and rehabilitation of equipment carried onboard the vessel. The engine room workshop shall at a minimum be equipped with the following:	

		• Pedestal drilling machine, • grinding machine, • arc welding, • gas welding with two (2) complete sets of cutting outfit, Personal Protective Equipment (PPE) and accessories, • welding bay, • workbench with vise, • universal tool assortments, • lathe machine and • cabinet for tools. The electronic workshop area, on the other hand, shall at a minimum consist of: • a standard test panel, • steel workbench with vise, • standard set of tools, tools cabinet, PPE and locker for spares.	
	Garbage Disposal Area	The vessel shall be provided with a garbage disposal area for the compacting, packing and temporary storage of domestic garbage including food waste in accordance with Classification Society/IMO Standards. Stowage racks shall be provided for both processed and unprocessed solid waste.	
	Damage Control Stations	The vessel must have a minimum of two (2) Damage Control Central and three (3) Repair Lockers. Each DCC shall be located as far apart as practicable and shall be connected to the builder-provided Platform Management System (PMS) to assist the crew in minimizing the damage sustained.	
	Laundry and Ironing Facility	The vessel shall be provided with an appropriate number and type of laundry equipment/facility that shall allow for the washing and drying of clothing	

		and bedding of its crew and embarked passengers. Sufficient ironing facilities shall also be provided for the crew and embarked troops.	
	Food Storage Spaces	The vessel shall be provided with refrigeration and food storage spaces appropriate for the required endurance days that shall meet pertinent NAVSEA standards ("Weights and Stability" Chapter 096). The following shall be the minimum spaces provided: • Dry store, • daily store, • fruit/vegetable store, • dairy store and • cold stores. All stores shall be fitted with stowage racks, the material of which is appropriate for the minimum and maximum temperature per store.	
20	**DECK EQUIPMENT (Minimum)**		
	All hawsers, steel wires, rat guards, mooring ropes and those required by naval operations shall be provided by the builder.		
	Anchors and Anchor Chains	The vessel shall be provided with two (2) bow anchors and anchor chains corresponding to its displacement. The chains are to be stowed in chain lockers located at the forepeak. Anchors should be provided with a small floater and a 50m line. Chain stoppers shall likewise be provided to relieve the anchor winch from holding the chain when anchored. An anchor windlass, which is remotely operated at the forecastle, shall also be provided as part of the vessel requirement.	
	Capstans	Capstans located aft and forward, shall be provided that shall have sufficient brake power for mooring the vessel.	

	Vehicle lift	The vessel shall be fitted with a vehicle lift capable of lifting a vehicle of at least 10 tons (SWL) safely from the tank deck to the helideck. The vehicle lift should have a variable speed control: slow, medium, and fast.	
	Deck Crane	The vessel shall be fitted with a Hydraulic Deck Crane at the Heli deck with an SWL of 5 tons.	
	Stern and side ramp	The vessel shall have a stern ramp for well deck operations. The SWL of such should be of at least 40 tons. It shall have a clear headroom of at least four (4) meters to allow safe and convenient passage of LCUs and AAVs or other vehicles. Likewise, it shall have two (2) side ramps (1 Port and 1 Starboard) with an SWL of at least 40 tons and should be positioned so as not to hamper the loading/unloading of vehicles. As far as practicable, it shall be designed to be able to adapt to any tide condition and pier height. It shall have a clear headroom of at least 4.3 meters.	
	Halyards	The vessel shall be equipped with at least two (2) halyards per side. It shall also have a center halyard for the National Ensign for use while underway.	
	Other Deck Equipment (minimum)	The following deck equipment shall also be included: • Chain bin, • Mooring winch, • Bollards, • Cleats, • Rope reels, • Rope bins, • Anchor roller and	

		• Gangplank/brow.	
21	**Communications, Electronics, and Information System**		
	Command and Control (C2) Room	The vessel shall have a C2 room for their situational awareness and real time communication and must have the following at a minimum: • Two (2) 55" LED TV, • four (4) 32" LED TV, • conference system with one (1) master and six (6) slave mics with desk stand mic with 2 speakers and • VTC digital camera. It shall have an adequate space for conference table with six (6) chairs.	
	Electronic Room with equipment rack	The vessel shall have an Electronic Room equipped with the following: • Network Servers, • CCTV equipment, • Downlink receiver and • other electronic equipment and devices of the ship It must have an adequate space for at least four (4) Data Cabinet and two (2) tables with six (6) chairs.	
	Sound Power Telephone (SPT)	The Sound Powered Telephone must be integrated with the internal communication system. The twenty (20) stations listed below must be allocated with SPTs with two (2) SPT extension of at least 30 meters for fantail and forecastle: Billet/ station — Number • Bridge — 1 • CIC Room — 1	

		• Heli Control Room 1 • Secondary Gun(Port) 1 • Secondary Gun (Starboard) 1 • Emergency Generator Room 1 • Damage Control Room 1 • Heli Hangar 1 • Primary Gun 1 • Middle Deck (Port) 1 • Middle Deck (Starboard) 1 • After Deck 1 • Fore Deck 1 • Well Deck 1 • Tank/Trunk Deck 1 • Damage Control Station 1 1 • Damage Control Station 2 1 • Steering Gear Room 1 • Engine Room 1 • Main Switch 1 **Total: 20**	
	Squawk box	Squawk box should be available at the following stations: Station Number • Bridge 1 • Commanding Officer's Cabin 1 • Ward Room 1 • Damage Control Room 1 • Sickbay (Male) 1 • Sickbay (Female) 1 • Engine Control Room 1 • Engine Room 1	

		• Task Force Operations Room 1 • Radio Room 1 • Officer's Wardroom 1 • VVIP Wardroom 1 • Crew's Mess Hall 1 • Troop's Mess Hall 1 **Total: 14**	
	Private Automated Branch Exchange (PABX) System	The Private Automated Branch Exchange (PABX) should allow a single access number to offer multiple lines to outside callers while providing a range of external lines to internal callers within the ship. The PABX shall have the following minimum features: • Ports: 200 ports (min) • Phones (wired): 200 phones (min) • Maximum Cell Stations (Antennas): Up to 128 (min) • Maximum Voice Processing System: 8 units • External Paging Outputs: 2 • RS232C/SMDR Outputs: 1 • Ethernet (10 Base) for CTI/Programming: 1 port • Conferencing each shelf: 3 to 8 parties per conference • Call Forwarding • Caller ID/Call Logging • Caller ID Routing • Caller ID Name Announce • Caller ID Personal Greeting • ISDN Primary Rate Service • Absent Message Capability • Automated Attendant	

	Pipe In Music and Paging System	The Pipe In Music and Paging System must be capable of broadcasting announcements, orders, and four (4) different alarm tones to cover all vessel compartments. It must have consoles for announcements and alarm tones in different designated areas with Integrated Communications Control System (ICCS).	
	Navigational Telex (NAVTEX)	The Navigational Telex (NAVTEX) must be capable to display and generate/print data on weather forecast information in compliance with Global Maritime Distress and Safety Systems (GMDSS)	
	VHF/FM Marineband Base Radio	Two (2) sets radio transceiver for use during communications to Civilian Vessel located at the bridge and radio room and must have the following minimum specifications: • Frequency range: 156 – 162 MHz • Pre-programmed marine band channels • At least 25W RF output • Marine type whip antenna • With power supply • Must be integrated with ICCS	
	VHF /FM Marine Band Radio (Handheld)	Eight (8) sets portable radio transceiver with battery for use during communications to civilian vessel that will be utilized during RHIB operation that is water proof and can float with a minimum RF output of five (5) Watts.	
	VHF/AM Air Band Radio **(Base)**	Two (2) sets of airband radio transceiver located at the Bridge and the Helicopter Control Station for use in communicating with aircrafts, the following are the minimum specifications: • Frequency range: 118- 136 MHz • At least 25W RF output • Marine type Whip Antenna • Must be integrated with ICCS	

	VHF/AM Air Band Radio **(Handheld)**	Four (4) sets of airband portable radio transceiver with battery for use in communicating with aircrafts. The handheld radio must have a minimum of five (5) W RF output and 2300mAh Li-ion battery.	
	UHF/FM Radio (Base)	Two (2) sets of UHF radio transceiver located at the Bridge and Radio room for use as internal communication of the ship with the following minimum specifications: • Frequency range: 403 - 470 MHz • Marine type UHF antenna • With power supply • Must be integrated to the ICC • Must have AES 256 Encryption	
	UHF Hand Held Radio	Minimum of fifteen (15) sets of portable UHF radio transceiver with battery for use as internal communications with the following minimum specifications: • Frequency range: 403 MHz – 470 MHz • At least 4 W RF output • Must have AES 256 Encryption	
	Secure Multiband VHF/UHF Base Radio	At least (2) sets of VHF/UHF Base radio located at the Bridge and Radio room for shipboard configuration to be used in ship to shore communication with the following minimum specifications: • Frequency range: 30 - 512 MHz • RF output: 50 watts • Inter-operable with existing AFP radios in secure mode of communications for voice and data • Citadel encryption must be embedded in the radio • Must meet military standard specification	

		• Must be integrated with ICCS	
	Secure Multiband VHF/UHF Handheld Radio	Five (5) sets of VHF/UHF Handheld radio with battery for use in Line of Sight communications for VBSS Team with the following minimum specifications: • Frequency range: 30 - 512 MHz • RF output: 5 watts • Inter-operable with existing AFP radios in secure mode of communications for voice and data • Citadel encryption must be embedded in the radio • Must meet military standard specification • Must be integrated with ICCS	
	Secure VHF/HF Radio	Two (2) HF/VHF radio for shipboard configuration to support high-speed communications with data rates up to 120 kbps with minimum configuration: • Frequency range: 1.5 – 59.99 MHz • RF output: 150 watts – 220 watts • Inter-operable with existing AFP radios in secure mode of communications for voice and data • Citadel encryption must be embedded in the radio • Must meet military standard specification • Must be integrated with ICCS • With Rugged Laptop with Microsoft Application(lifetime license), Antivirus Software(At least 3 yrs license)	
	HF/SSB Data Communications System	At least one(1) set of HF/SSB radio for use as longhaul ship communication with the following minimum specifications:	

		• Frequency range: 0.5 – 29.99 MHz • RF output: 150W minimum • Marine type antenna • Automatic Antenna Tuner • Power Supply: 13.8 VDC, 30A • HF Modem, Pactor 4 • With Rugged Laptop with License Operating System, Application and Antivirus Software(at least 3 yrs license)	
	Video Teleconference System (VTS)	One (1) set Video Teleconferencing System (VTS) to facilitate the communication and interaction of two or more users through a combination of high-quality audio and video over Internet Protocol (IP) networks and must possess the following minimum equipment: • Digital Video camera • Two (2) speakers • Six (6) microphones (1 master and 5 slaves) • Two (2) computer server -With 32 GB Memory(min) -With 2 TB or Higher Hard Disk Drive (HDD) -With latest Operating System and Microsoft Office / -With Antivirus software (BitDefender) with 3 years license • Two (2) TV (as monitor)	
	Satellite Communications for VTC	A mini-VSAT Broadband network to provide reliable global broadband connectivity for mission-critical work. It should feature seamless transitions between Ku- and C-band coverage while providing the very low latency that is required for messaging applications. It must provide a download/upload speed as fast as 4 Mbps/1 Mbps (min) and affordable service and airtime plans. With dual-mode C/Ku -band type antenna and have the	

		antenna disk of 1.1 m (max).	
	Satellite Communications (Internet)	A mini-VSAT Broadband Network to provides reliable, secure coverage for mission-critical work. It must provide a download/upload speeds as fast as 10 Mbps/3 Mbps and affordable service and airtime plans. KU-band type antenna and have the antenna disk of 60 cm (min).	

	Cellular signal repeater	The signal repeater must be used to provide a strong cellular signal inside the ship with the following minimum specifications:
		• Antenna
		  ○ Antenna connectors: N/SMA Female
		  ○ Must have an indoor antenna and outdoor omni antenna
		• Indoor antenna
		  ○ Power rating: 50W
		  ○ Impedance: 50 ohms
		  ○ Polarization: Vertical
		  ○ Working Temperature: -40°C to +65°C
		• Outdoor omni antenna
		  ○ Power rating: 100W
		  ○ Impedance: 50 ohms
		  ○ Polarization: Vertical
		  ○ Working Temperature: -40°C to +65°C
		• Network: GSM /3G/ 4G or above and compatible to the existing Philippine network provider.
		• Frequency: 800/900/2100/2600 MHz
		• Power supply
		  ○ AC: 100-240V/50-60 Hz
		  ○ DC :12V/3.6A
		• It must have a complete operator network protection within 3 yrs warranty	

		• Must be installed in CO's Cabin, VVIP Cabin, Wardroom, Crews Mess Hall and Troops Mess Hall	
	Handheld Satellite with Satdock	A handheld satellite phone of Inmarsat that is a reliable and robust handset to cope with searing heat and monsoon rain. It should have a battery life of 8 hours of talk time and up to 160 hours on standby.	
	Downlink Receiver System	To provide real-time video from PN Helicopter. The Downlink Receiver System shall have the following features: • Soft Case Receiver Unit • Power Supply: 90 - 264 VAC, • COFDM Video Link Diversity Receiver specification • Channels: Pre-selectable frequency channels (16 max) • Decryption: Advanced Encryption System 256-bit • Said equipment must be compatible with the existing Downlink Receiver of PN	
	Integrated Communication and Control System(ICCS)	The ICCS must be capable of integrating internal and external communication of any equipment manufacturer and provide full integration of any type of equipment – including HF, VHF, UHF or SATCOM radios, modems and encryption devices. External and Internal Communications must have the following minimum features: • Voice recording • Centralized network management station • Digitalized communication switching units	
	Local Area Network (LAN)	The vessel shall be equipped with a Local Area Network (LAN) to exchange data between computers through fiber-optic. It must have a minimum of one (1) computer server with firewall	

		(Fortigate 60e) at the Electronic Room, and laptop computers for the following workstations; • CO's cabin, • CIC room, • C2 room, • TF Operations room, • Wardroom, • Ship's Administration office, • Ship's Other Department offices (6 Connection), • DC Central and • Aviation Office Each computer shall have a Licensed Operating System, Application and Antivirus Software(3 yrs licenses).	
	Acoustic Hailing Device (AHD)	The AHD should broadcast highly intelligible communications and warning tones with focused acoustic output to clearly determine the intent of vessels not responding to radio calls, change threat behavior and enlarge vessel standoff zones. This should be remotely operated, with HD camera, searchlight and can also provide intelligible voice communication of 3,000 meters (minimum). It should have two(2) units intercom speaker and with following specifications: Amplifier • Output power: 30 Watts • Hail Mode: less than 10%(1KHz 30W) • Intercom Mode: less than 10% (1KHz 4W) • Internal Speaker: 2.0W,8Ω(min) • External Speaker:4W, 8Ω(min)	

		• Operating temperature: -15° to + 55°C (min) • 13.8 VDC,11A(max) Microphone • Microphone impedance: 60 ohms(min) • Auxiliary impedance:10 Kilo ohms	
22	**NAVIGATIONAL SENSORS**		
	Master Gyro Compass System	The Master Gyro compass must support the analog and digital repeaters and shall contain the following features: • Will drive at least a minimum of twelve (12) repeaters • Integrated monitoring of the supply powers, gyroscope current and follow up system • High speed follow up system 100 % per second • Automatic power changeover from AC mains to DC emergency supply and status alarm • Self-synchronizing repeater compasses It must have the following specifications: • Linear mean settle point error(RMS): ≤ 0.1° Secant Latitude • Static error(RMS): ≤ 0.1° Secant Latitude • Heading resolution: 0.1 • Roll and pitch ± 60°C • Settling time: 1hr (max) • Power supply ○ DC: 2 x 24VDC main and back up	

		○ AC:20W • Ambient Temperature : -15°C to + 55°C/ 5°F to 131°F • Storage Temperature: -25°C to + 75°C/ -31°F to 158°F • Power consumption: 20W	
	Gyro repeaters	Analog gyro repeaters with azimuth takers and stand will be installed at the port and starboard wing. Further, digital repeaters will be installed at the Commanding Officer's (CO's) cabin, bridge, CIC, and emergency steering room. The Gyro repeaters shall have a console version and in watertight housing with bracket attachment.	
	Magnetic Compass	The binnacle type magnetic compass (including magnetic fluxgate coil that provide digital data output for bearing repeaters) shall be installed and capable of providing data of vessel's own magnetic heading at conning stations and digital gyro repeaters at emergency steering room and other stations. It must have the following specifications: • Aluminum Alloy Binnacles • Accuracy is better than 0.5 degrees • Top lighting: 220/230 VAC or 12-24 VDC	
	Satellite Compass	It shall provide a high system accuracy for the heading of the ship with the following minimum specifications: Display/receiver unit: • 4.3-inch color LCD • 480 x 272 dots (WQVGA) • Display mode: Heading, Navigational data, Rate of return and speed	

		• Pitch/roll: 0.4 RMS • Settling time: 90s approx(typical) • Position accuracy: WAAS 3m (min) • Temperature Antenna Unit : -25°C to +55°C • Waterproofing Antenna Unit : IP56 • Power Supply: 12-24 VDC: 2.1-1.1 A	
	Navigational Radar	Two (2) navigational radars: One (1) X-band and one (1) S-band with solid state transceiver (200 watts min) shall be provided. Both radars shall provide information on the vessel's motion, position, and environmental data required for the vessel's safe navigation. **S-Band Radars Specifications** • Output power: 200W(min) • Daylight-bright rasterscan 21-inch multi-color, high-resolution display • New microprocessing technology with high-speed, high-density gate array and sophisticated software • Easy operation by combination of discrete keys, rotary controls, and menu operation, all logically arranged Display Unit • At least 26" colored LCD • Multifunction display capability with chart radar (using AVCS chart) • Operating temperature : -15°C to +55°C Processor Unit • Automatic Radar Plotting Aid for 40 targets Data Presentation • Own ship • Target tracking by ARPA and AIS • Electronic Plotting Aid (EPA) fitted standard	

		• Position calculation • Navigational planning • Route monitoring • Notes data • MOB Control Unit • Radar control unit • Trackball control unit Antenna Unit • Slotted waveguide array • Length:12 ft • Rotation:42rpm • Frequency: 3050 MHz Transceiver Unit: • Solid state • Frequency: 3050 +/- 30MHz Power Supply Unit • Input voltage:100-230VAC,1 phase 50/60Hz • Input current: 5-6A **X-Band Radars (25KW) Specifications** • High resolution LCD display providing crisp echo images • Low spurious magnetrons meeting ITU-R unwanted emission standards • Standard ARPA functions displaying 100 ARPA targets acquisition • Display up to 1000 AIS symbols • Improved detection capability by new MIC and I/F amplifier • Complies with the following IMO and IEC regulation	

		• Two independent X- and S-band radars can be inter-switched to meet SOLAS requirements on ships 3,000 - 10,000 GT Display Unit • Minimum of 19" Sunlight viewable color TFT LCD with anti-reflective film • Display windows: Radar, chart plotter, weather fax,AIS, depth sounder and data bar display • Minimum of 256 display colors and 1600x1200 pixels VGA resolution • 12-24 VDC voltage range • With system and navigation alarms • Operating temperature: -15°C to +55°C Processor Unit • ARPA capabilities • ECDIS: AVCS • Radar, chart plotter, weather fax, depth sounder and data bar capabilities • Four (4) data interfaces/ports, radar signal port and optional VGA connection Control Unit • At least 20 Inches with Trackball Antenna Unit • Antenna scanner unit:8 ft(min) • Motor antenna rotation must have at leats 24-36 RPM Transceiver • Frequency: 940 +/-30MHz • Output power: 12KW Power Supply Unit	

		• Input voltage:100-230 VAC,1 phase, 50/60 MHz • Input current: 3.7A (min)	
	Electronic Chart Display and Information System (ECDIS)	The electronic chart display using Admiralty Vector Chart System (AVCS) with server shall provide the user the ability to plan routes and set waypoints, and display vessel position. The ECDIS must be integrated with the navigation radar, AIS and provided depth sounding set. Initial one year subscription of charts needed, from the builder's premises to Manila and sailing and navigational charts of the Philippines to include all harbor and approaches.	
	Navigation Software with rugged laptop	The Navigational Software shall have the following features: • Pass the IMO Standard • Supported by the latest Windows Operating Systems • Can connect to NMEA0183 and NMEA2000 and can interface other navigational equipment • Unlimited Marks, Waypoints and Routes • Boundaries, Circles, Lines and Annotations • Layers and Marks Management • Advance events Management • Worldwide 3D Database (Base Map) • Depth Shading (Color according to depth overlaid on the chart) • Worldwide Tide Database • Track Recording (with tract recall feature) • Advance Route Planning Wizard (Route Departure Time Optimization according to Tidal Current • Search and Rescue (SAR) Patterns	

	Global Positioning Systems (GPS) with Chart plotter	Two (2) sets of GPS with chart plotter which is an electronic navigation system that combines a GPS receiver with the capability to display electronic charts/maps, enabling the watches to continuously monitor the position and movement of vessel in relation to the surrounding physical environment and with the following specifications: Display Unit • 7" LCD(min) with 800x480 pixels • Operating temp:-15°C to 55° C Plotter Characteristics • Display mode: Course plot, navigation data, compass display(min) • Tracking point: 80,000(min) • Mark point: 3,500(min) Power supply unit • Input: 115/230 VAC • Output:12-24 VDC, 30W GPS Antenna Unit • Frequency:1575.42 MHz • Impedance of 50 ohms • Supply voltage: 4 to 5.5 VDC • With right hand circular polarization	
	Fathometer	One (1) kW transducer fathometer to provide distance from the vessel to the ocean floor and provide a real time graphical representation or profile of the floor terrain with repeaters and following minimum specifications:	

		Display Unit • Minimum of 10.4” color (SVG: 800 x600) min • Range: 5,000 to 3,000m • Operating temp:-15 to =55°C • English language Power supply • Input 22/230 VDC • Output: 12 to 24 VDC,3.3A (max) Transducer Unit: • Output power: 600W • Beam angle: 28 deg (max) • Frequency: 200KHz(max) • Weight: 9lbs(max) • With 15 meter cable with connectors.	
	Automatic Identification System	The vessel shall be equipped with one (1) Automatic Identification System (AIS), which is a Class “A” standard AIS compliant with the international standards. Its main function is to aid in monitoring the maritime traffic and to improve the navigational security and shall have the following specifications: Transponder unit • Tx/Rx Frequency: 156.025 to 162.025 MHz • Bandwidth: 25 KHz • Output power:1/12.5W • Operating power:-15 to +55 deg C Antenna unit • VHF:50Ω • GPS Standard antenna	

		Power Supply unit • Input: 100/220/230 VAC Output: 12-24VDC,6.3A	
	Anemometer	It shall be able to provide measurements of wind speed and direction and other meteorological data. This device must have the following specifications: Display Unit • LED/LCD • Operating temp: -15 degrees to + 55 degrees • Power supply: 12-24 VDC, less than 0.1 mA Wind sensor • No moving parts • Wind direction:0 to 360 degrees • wind speed range: 0 to 168 mph(min) • Power supply: 10 to 30 VDC • Cable: 50m with connectors • NMEA inputs/outputs: Standard RS232 Power Supply Unit • Input: 220/230 VAC • Output: 12/15 VDC, 0.25 mA (max)	
	Weather Facsimile	It will provide weather charts and satellite images in nine gray levels on 8" thermal paper. Electronic scanning and thermal head printing in nine shades of gray produce high quality facsimile images, while minimal mechanical components allows for an incredibly quiet operation.	
	Search and Rescue Radar Transponder	This device is a self-contained, waterproof transponder intended for emergency use at sea. It can locate a survival craft or distressed vessel by creating a series of dots on a rescuing ship's radar	

	(SART)	display. This shall also be installed at each of the Landing Craft Utility (LCU) and Rigid Hull Inflatable Boat (RHIB).	
	Emergency Position Indicating Radio Beacon (EPIRB)	The vessel shall be equipped with a minimum of two (2) EPIRB which is to provide the vessels location during emergency situation. It shall be installed at the bridge wing of the ship and must have the following minimum specification: • Effective sensitivity: better than -50dBM • Operation: 96 hrs in standby condition • Battery life: 5 yrs • Frequency: 9.2-9.5 GHz	
	Closed Circuit Television System (CCTV)	The CCTV system to provide situational awareness in the ship and video monitoring at designated areas. This system must have two (2) NVRs, thirty-four (34) cameras and a minimum of four (4) heat, and moist resistant cameras with the following specifications: Network Video Recording (NVR) • It must be compatible to all CCTV camera with minimum 1080P • It must have available port to every watertight door • Two (2) Thirty-two (32) channels in terms of video • Two (2) channel for audio input Twenty-nine (29) ea bullet type CCTV camera • 1080P(min) Bullet camera • Horizontal Resolution: 2.0 Megapixel • 3.6mm Megapixel Lens • 25/30fps at 960P, Built-in IR Cut • High speed, long distance real-time transmission over 500m via coaxial cable • Day/Night (ICR), AWB, AGC, BLC, 2D-DNR • Smart IR, IP66, DC12V	

		• 3pcs Led Array, *25-30m IR distance Four (4) each CCTV Camera for engine room • with unobtrusive dome design • plug and play with compatible multifunction displays • ceiling or wall mount • manually adjustable pan and tilt • composite video output • heat and moist resistant Three (3) ea- Pan Tilt Zoom (PTZ) CCTV camera for tank deck, hele deck and bridge deck • Image Resolution: 1920 x 1080 • Effective pixels: 1920 x 1080 • Lens focus length: 4.7 mm -94mm • Close focus distance 100mm-1000mm	
	Forward Looking Infrared (FLIR)	The device can provide the short and ultra-long range target detection and identification, stabilized thermal camera system can help you observe suspicious activity or react quickly to emergency situations. It must have a 14X continuous optical thermal zoom, a color HD camera with 30x zoom, a LED spot-beam, video tracking and radar integration.	
	Night Vision Device (NVD)	It shall have a minimum of six (6) night vision devices (binocular type) with high-resolution Image Intensifier Tube and five times (5x) magnification lens with following specifications: • Generation 3 • Resolution: 57-64 • Operating temp: -40 to +55 deg C • Long range infrared illuminator	

		• Water, dust and fog resistance	
	Voyage Data Recorder (VDR)	The equipment will collect data from various sensors on board the vessel. It digitizes, compresses and stores information in an externally mounted protective storage unit and tamper-proof. It must be designed to withstand extreme shock, impact, pressure and heat, which could be associated with a marine incident.	
	Navigation Auto-Pilot System	The Navigation Auto Pilot System shall have the following features: • Heading keeping with minimum rudder motion • Course change control by setting either turn rate or turn radius • Rudder limit setting (available as an alternative to setting rate or radius) • Direct RS 422 connection for heading reference or navigation system • Full alarm complements via the display unit and the alarm contacts	
	Integrated Bridge System (IBS)	The vessel must have navigation management system which links other systems to provide all the details pertaining to ship's navigation at one place. The IBS must have the minimum: • Autopilot • Dual Radar/ARPA • Gyro • Position fixing systems • Dual ECDIS setup (Master + Backup) • Conning Display • Platform Management System • GMDSS	

	STANDARDS	The vessel shall be designed and built in accordance to the standards set by SOLAS, IMO and any of the following International Classification Society: • Lloyd's Register • American Bureau of Shipping (ABS) • Bureau Veritas (BV) • DNV-GL The vessel shall be class certified and have the following minimum equivalent class notation: **+100A1, +LMC**	
23	**WEAPONS AND SENSORS FITTINGS**		
	Perimeter Machine Guns	The vessel shall be equipped with at least eight (8) 0.50 cal Perimeter machine guns with gun mounts.	
	Weapons	The vessel shall be fitted for (but not equipped) with the following weapons systems (owner furnished Equipment-OFE): • Primary / main gun fore mount (will at least accommodate a 76MM SR gun or a similar caliber/size weapon system); • Secondary guns P / S / Aft mounts (will at least accommodate a 30mm gun or similar caliber/size weapon system); • Closed-In-Weapon-System (CIWS); • Fire Control System, and • Decoy Launching System	
	Sensors	The vessel shall be fitted for (but not equipped) with the following sensors (owner furnished Equipment-OFE): • Air / Surface Search (3D) Radar; • Electro-Optical Fire Control System;	

		• Gyro Compass • Combat Management System, and • Electronic Warfare System • Hull Mounted Sonar	
24	**CREW AND MAINTAINERS TRAINING AND ACCOMODATION**		
	Owner's Representatives	Board and Lodging for the Owner's representatives (at least 5 members): lodging in designated facilities near or in the shipyard, meals in designated shipyard canteen or equivalent, pick-up airport/hotel and back, daily transportation from training/project venue and lodging area and health insurance. An office with communications equipment and other office equipment will be provided to the team. The builder shall likewise shoulder all expenses related to the departure of the crew to the builder's premises, such as visa fee, pre-departure expenses and the likes, as is applicable.	
		The builder shall shoulder all expenses in accordance with the training plan such as plane tickets, place of training, training materials, board and lodging and other incidental expenses related to training. The trainings to be provided must be relevant to the vessel especially for specific equipment, machineries, and systems installed in the vessel. The builder will include operators and maintainers training courses for Platform and systems at the organizational, intermediate and depot levels. The builder will present to the owner for their concurrence and approval a training plan that defines process, framework, schedule and requirements of the training to be provided to the crew. Training shall be at the builder's, OEM's or allied Navy's premises. Training materials, documents and other references related to training shall be made available for the trainees in English both in hard	

		and electronic copy. The builder in as far as practicable shall provide a training/bridge simulator for use of the Philippine Navy. The intent of this simulator is to train projected crew onboard the vessel. Trainings to be provided but not limited to the following: 1) Navigation Systems Training a) Navigational and Sensors equipment b) Intermediate Level of Maintenance training c) Integrated Bridge Navigation System 2) Communication Systems Training a) Internal Communication System Training b) Integrated Communication System Operations Training c) Basic Telephone Installer & Outside Plant Engineering Course d) Internetworking Essentials & LAN Technology Course e) Harris Radio Operations and Maintenance Course f) VSAT Maintenance Training 3) Hull, Machinery, and Equipment a) Shipboard operation and organizational maintenance training b) Intermediate Level of Maintenance and Repair Training c) Depot Level Training 4) Helicopter Operations Training a) Flight quarters operations Training b) Helicopter Traversing and securing training c) Helo crash drill d) Flight deck Firefighting e) Helo inflight refuelling	

		f) Day and Night Landing Qualifications Training g) Helicopter Maintenance Facilities Training 5) Operational Training a) After the industrial training, the builder shall liaison, coordinate, obtain and provide the PN with a mutually agreed upon operational training package that can be carried out at designated facilities and infrastructures to be determined later. b) Included in this Operational Training is an Operational Readiness Evaluation (ORE) of the crew to ascertain that the vessel is ready to perform its primary employment purpose. c) The purpose of the training is to finalize from the operative point of view the crew and the officers on the operationalization of the capabilities of the vessel.	
	Technical Publications and Manuals	• Appropriate and sufficient documents shall be provided for training, operations and maintenance. These documents shall be in English Language and include; Technical Publications and Manuals, Information Bulletins, Training or Course Manuals, Instructor's Guide, Handbook for Specialists, and Media Support. Media Support shall include CDs, DVDs, and others. The following technical manuals or equivalent must be provided: • List of Applicable Publications • Work Unit Code Manual • Maintenance Manuals which include the following: - General Equipment Description - General System	

		- Set of Pocket Volumes - Wiring Data - System Detailed Schematic and Circuit Diagram - Structural Repair Manual - Illustrated Parts Breakdown - Basic Weight Checklist and Loading Data - Inspection Requirements Handbook - Corrosion Control Manual - PMS Schedules as recommended by OEM • Armaments Operation and Maintenance Manual • Non-Destructive Inspection Manual and • Other Technical Orders and System Equipment Manuals • Blue print of Electronic wiring diagram • Plan Maintenance System • Technical Allowance List • Consolidated Shipboard Allowance List • List of Changes/Modifications/Maintenance Records The following Construction plans of the hull, structural, machineries, auxiliaries, etc shall include the following: • General specifications • Lines and offsets • Amidships section • Scantlings profile and decks • Bottom construction, floors, girders, etc • Framing • Inboard profile	

		• Outboard profile Deck Plan • Inner bottom plating • Shell expansion plan • Pillars and girders • Watertight and deep tank bulkheads • Miscellaneous watertight bulkheads which are structural • Supports • Shaft tunnels • Machinery casings, engine and main artillery foundations • Bow framing • Stem • Stem framing • Stem frame and rudder • Steering gear • Shaft struts • Structural frames and bossing details • Superstructure and deckhouses • Hull penetrations and shell connections • Ventilation system on weather deck • Capacity plan and/or grain loading plan • Hydrostatic curves of form • Cross curves of stability • Bonjeans, curves and stability calculations for damaged conditions • Floodable length curves and calculations • Tank sounding tables • Draft mark locations • Specification and description of the hull riveting and welding and/or fastening	

		• Trim and Stability Calculation • Piping System • Electrical Plan • Shell Expansion Plan • Steering System • Air System • Lube Oil System • Salt Water/Fire Flushing System • Pneumatic System • Hydraulic System • Sewage System • Fuel System • Fresh Water System • Dry docking Plan • Propulsion System • Propeller Blade Design • Bonjeans Curves • Ventilation System • Airconditioning System • Cooling System • Fixed Fire Extinguishing System • Fire Control System	
		As part of the product support information, publications and technical bulletins shall also be provided. It shall include among others: • Information Bulletins for applicability of new equipment and accessories, and information related to the operational use of the machineries, weapons and navigational equipment. • Service Bulletins for notice of requirements for special inspections, advance instructions for performance of repair and special actions, advance instructions for	

		maintenance of the vessel accessories.	
25	**INTEGRATED LOGISTICS SUPPORT**		
		There shall be standard Carry – on Board spares based on PN Utilization Profile (3,650 hrs) for the Landing Docks (LDs), four (4) Landing Craft Utility (LCUs) and four (4) Rigid Hull inflatable Boats (RHIBs) as provided from the systems OEM. Likewise, 2 years PMS spare parts stored in a galvanized container van with appropriate storage, lifting and handling equipment for forward logistics support for each vessel. Correspondingly, needed tools, diagnostic devices, and special tools shall be provided to undertake Organizational, Intermediate and Depot Levels of maintenance. There shall likewise, be training for Philippine Navy personnel for the three (3) levels of maintenance of major equipment, including but not limited to, main propulsion machinery, bow thruster, hydraulic system, and auxiliary equipment. Operational and maintenance manuals, drawings, diagrams and other publications of each system shall be provided. Consolidated shipboard allowance list of logistics shall be provided for supply management system. The builder will identify required spare parts and Special Tools and Testing Equipment (STTE) for all the equipment onboard the vessel. They shall include but not limited to the following: • Carry on spares necessary to perform organizational preventive and corrective maintenance, • Spare parts necessary to perform intermediate base preventive maintenance for two (2) years, • Spare parts to perform intermediate corrective maintenance tasks,	

		• STTEs to perform organizational maintenance tasks for platform, weapon systems and ammunition and • STTEs to perform intermediate maintenance tasks for platform, weapon systems and ammunition.	
	Initial Provisioning	As part of the initial provisioning, the builder shall identify and provide lists and supplies that are relevant to: Boatswain and Seamanship; Propulsion mechanical workshop, Hull and auxiliaries mechanical workshop, electrical workshop, electro-mechanical workshop, flags and signalling, sickbay, galley and berthing and accommodations. Similarly, spares sufficient for two (2) years of operation shall be provided based on Original Equipment Manufacturer (OEM) recommended scheduled maintenance inspection. The builder shall similarly provide two (2) sets of common tools and two (2) sets of special tools and test equipment per vessel for organizational level maintenance as part of the initial provisioning.	
	SPARES	The vessel shall have carry on-board spares for: • Landing Platform Dock (LPD) • Two (2) Landing Craft Utility (LCU), • Two (2) Rigid Hull Inflatable boats (RHIBs). These spare parts shall cover at least two (2) years after final TIAC acceptance by the Philippine Navy. The builder will identify spare parts for all the equipment on board the vessel based from OEM. They shall include the following: • Carry on board spares necessary to perform organizational preventive and corrective maintenance and • Spare parts necessary to perform intermediate corrective maintenance tasks.	
	DOCUMENTATIONS	Documents to show that engine manufacturer/dealer is providing 3 years ESC	

		(Extended Service Coverage) warranty on main engines if contract is awarded to them.	
		Builder must show proof that propulsion system & service support are locally or at least regionally available for the next twenty (20) years.	
		Builder must show proof that main engine has sufficient (at least 5) factory trained and certified CMA (Certified Marine Analysts) in its employ.	
		Planned Maintenance System, Calibration Tools and Basic Tools Requirements for 3 levels maintenance program.	
		Consolidated Shipboard Allowance List (COSAL)	
		Operation, Maintenance and Illustrated Parts Manual	
		Ships Engineering, Scantling calculation, Speed and Power	
		Stability Booklet	
	STANDARD WARRANTIES	The vessel shall be free from ship and equipment defects in materials and workmanship on the date of delivery. The vessel shall only be accepted by the Philippine Navy upon completion of inspection and tests. Each part/ component shall be manufactured from new parts. Warranties for performance and material defects shall apply for at least one (1) year from final TIAC or normal equipment manufacturer's warranty, whichever is longer. Implied warranties shall apply. The Philippine Navy Shall implement a ''Fixed Priced'' contract. The following tests and trials shall be conducted in the following stages: 1.1. Stage 1 – Material Receipt Inspection and Shop test 1.2. Stage 2 – Shipboard Installation	

		Inspection and test 1.3. Stage 3 – Equipment Level Operation Tests 1.4. Stage 4 – Intra- system Test 1.5. Stage 5 – Inter- system Test 1.6. Stage 6 – Special Test 1.7. Stage 7 – Dock Trial 1.8. Stage 8 – Sea Trials 1.9. Stage 9 – Endurance Trial 1.10. Stage 10 – Final Acceptance Trial	
26	**TRANSFER OF TECHNOLOGY**		
		The Philippine Navy requires tie-up with local companies or shipyard so that a minimum of one (1) unit of the LD will be constructed in-country. The proponent shall identify, qualify and partner with a Philippine-based company that will provide services and parts necessary for the continuous and safe operation of the vessel. The proponent shall also establish a front office that shall serve as the single point of contact of the buyer for other companies/suppliers aside from the winning proponent. Likewise, the proponent shall identify and designate at least two (2) local repair/maintenance facilities capable of conducting repair and maintenance of the following systems onboard the vessel: • Main Propulsion Diesel Engine (MPDE) • Ship's Service Diesel Generator (SSDG) • Controllable Pitch Propeller (CPP) • Bow Thruster • Water Purifier System	
	Design Ownership	The builder shall either grant the ownership of the vessel's design to the Philippine Navy or grant a license to the Philippine Navy to manufacture/build using the design.	

27	**CLASSIFICATION SOCIETY**		
		Vessel construction should be certified by a classification society chosen, approved or had previous project with the Philippine Navy (PN). Said Society shall report to the PN on the certification work being done. The vessel shall be designed and built in accordance to the standards set by any of the following International Classification Society: a) Lloyd's Register b) American Bureau of Shipping (ABS) c) Bureau Veritas (BV) d) DNV-GL The builder shall ensure that all design criteria, material type approval, equipment arrangement and installation and workmanship shall be in accordance to the standards set by any of the listed International Classification Society. The vessel shall be class certified and have the following minimum equivalent class notation: +100A1, +LMC.	
28	**STANDARDS**		
	The hull structure shall pass the standards set by an International Classification Society (ICS) or accredited Register of Shipping selected by the PN.		
	The following rules and regulations will be met and certified, at the expense of the builder. Certificates will be final according to the standard from the appropriate bodies: ➢ SOLAS 2012 including all recent amendments (as far as applicable) Chapter I, Chapter II-1 except stability, Chapter II-2 and Chapter III ➢ International Maritime Organization (IMO) where applicable ➢ IMO/MARPOL 73/78 regulations ➢ International Load Line Regulation 1966		

	➢ International Regulation for Preventing Collisions at Sea. ➢ IMO emission regulations. ➢ IMO A468 XII (Noise levels) ➢ MEPC.5/CIRC 9 IMO Resolution - Pollution Prevention Equipment Required ➢ IEC regulations, Code IEC 60533: "Electrical and Electronic Installations in Ships ➢ Electromagnetic Compatibility ➢ Global Maritime Distress Signal System (GMDSS) up to sea area A-3	
	All relevant certificates required by class and/or authorities shall be delivered comprising of, but not limited to: ➢ Hull construction certificate (class) ➢ Safety construction certificate (class) ➢ Safety equipment certificate (class) ➢ Batch and line approval certificates, machinery (manufacturer) ➢ Trial test reports (two specimen copies) (builder) ➢ Stability booklet (four specimen copies) (builder) ➢ Anchor and cable certificates (builder) (manufacturer) ➢ Navigation Equipment (manufacturer) ➢ Life saving appliances (manufacturer) ➢ IOPP certificate (class) ➢ Engine room log-book (builder) ➢ Inventory list (builder)	
	Statutory documents will be obtained by the PN, while the builder will provide the relevant data.	
29	**NON-DISCLOSURE AGREEMENT**	
	The Builder shall execute a Non-Disclosure Agreement in favor of the Philippine Government wherein the supplier shall warrant that all information and communication, whether oral or written, secured in the course of negotiation with the Department of National	

	Defense/Armed Forces of the Philippines (DND/AFP) shall not be divulged or disclosed to any other person or entity, without the express written consent of the DND/AFP. It includes non-disclosure of, but not limited, to the following: a) Terms of Reference, b) Technical Specification of the Project, c) Annual Procurement Plan and related Project Procurement Management Plan and d) Proposals.	
30	**QUALITY ASSURANCE**	
	The contractor shall have a quality assurance team to supervise production and perform test and trial. The quality assurance shall be certified by an International Classification Society (ICS) chosen or approved by the PN which shall report regularly to the Philippine Navy.	