DETAILS OF ACCEPTANCE OF NECESSITY (AoN) FOR ACQUISITION 01 x 500 TON SELF PROPELLED (SP) DESALINATION BARGE

1. Acceptance of Necessity (AoN) has been accorded for acquisition of 01 X 500 Ton Self Propelled (SP) Desalination Barge on 24 Jul 26. The approved acquisition scheme is related to construction of 01 X 500 Ton Self Propelled (SP) Desalination Barge for which RFP would be issued shortly (under Buy (Indian-IDDM) with minimum 88% Indigenous Content (IC) in accordance with Section 'B', Chapter XII of DAP 2020). Vendors desirous of participating in the approved acquisition scheme related to procurement of 01 X 500 Ton Self Propelled (SP) Desalination Barge are required to submit their willingness.

2. Technical Specifications of the project are placed at **Appendix 'A'**.

3. The willingness should be dispatched to the following: -

Cmde (Ship Production)
Directorate of Ship Production
Naval Headquarters, Ministry of Defence
Room No. E-201, 2nd Floor
East Wing, Nausena Bhawan
Delhi Cantt, New Delhi 110010
Tele: 011-20896998
E-mail: dsp@navy.gov.in

FOR 01 X 500T SP DESALINATION BARGE

SECTION A – GENERAL		
1.	**Aim**	To lay down the Staff Requirements for 500 T Self Propelled Desalination Barge capable of generating fresh water through reverse Osmosis and replenishing water for ships and submarines in harbour (alongside) and at anchorage.
2.	**Functions**	To generate fresh water and provide to ships and submarines in harbour and at anchorage
3.	**General**	(a) The barge is to be built as per NHQ approved Classification Society standards (ABS/BV/DNV-GL/IRS/LR/RINA/ClassNK). The notation for the barge and QAP for shipbuilding, including trials, should be finalised in consultation with NHQ. Classification Society is to certify that the Class notation proposed by the Yard covers all the requirements of Build Specs Guideline Specifications. (b) A certificate is to be provided by the Classification Society confirming that 'Class Notations have been provided for all functional requirements indicated in the RFP'. (c) The barge should have capacity to generate fresh water using reverse osmosis plants. (d) The barge should have two Reverse Osmosis Plants fitted onboard with each plant having capacity of 200 Tons per day. (e) The barge should have 500 Tons water storage capacity. (f) The barge should have the capability of quick turn around (that is rapid replenishment of her tanks, for the next tasking). (g) The barge should be capable of supplying light stores to the ships and submarines. (h) The barge should have an expected life of 20 years. (j) The barge should comply with all the latest requirements of MARPOL/ MEPC and SOLAS Regulations. (k) Separate feed water and fresh water pumps are to be provided for embarkation/ disembarkation with 100% redundancy to make the barge self sufficient. (l) The barge should have configuration of storage tanks with variable capacity as per the design/ hull form.

		(m) The barge should have flexibility to utilise storage tanks in various configuration to accommodate fresh and fresh water as per requirement. (n) The main and auxiliary machinery of the barge should permit a continuous operation of 48 h
4.	**Speed**	(a) Maximum speed of 12 Kn upto 85% MCR. (b) Sustained: 10Kn
5.	**Endurance**	150 Nm with 25% fuel as reserve at sustained speed
6.	**Sea State**	Should be able to operate up to Sea State 4 and survive upto Sea State 6.
7.	**Crew**	13 (Thirteen)
8.	**Dimensions**	The principal dimensions of the barge should be as follows:- (a) Length - 55 ± 6% (b) Beam (extreme)- 9.8 ± 5%. (c) Draught - As per design (d) Displacement - As per design
9.	**Environmental Conditions**	All equipment should be marinised and capable of performing under the following ambient conditions: - (a) Ambient Air Temperature - up to 45° C (b) Average Machinery Space Space Temperature - up to 55° C (c) Sea Water Temperature - up to 35° C (d) Relative Humidity - 100% condensation Condensation at 35° C (e) The Marinised Package AC is to be designed to perform at rated conditions under the environmental conditions specified at (a) - (d) above. (f) All machinery, its sub-assemblies and control systems should be able to withstand continuous operation regimes.

SECTION B – NAVIGATION		
10.	**Bridge**	Bridge should have large inclining windows for all around visibility to assist manoeuvring alongside. All front windows should have Clear View Screen mechanism and other windows should have either Clear View Screen mechanism or marinised Window Wipers.
11.	**Magnetic Compass**	One Class approved magnetic compass is to be provided on the bridge. In addition, one boat compass to be provided.
12.	**Navigation Equipment**	Following Class approved Navigation aids are to be provided: - (a) Two G31 receivers. (b) Two AIS. (c) One Nav Radar.
13.	**Echo Sounder**	One Class approved Echo Sounder with interface printer to be provided
14.	**Fog Horn (Siren)**	Two Class approved electric fog horns are to be provided above the wheel house with local operating controls and provision for remote operations from the Bridge.
15.	**Nav Lights**	As per International Regulations for Prevention of Collision at Sea (IRPCS) - 1972, Battery and backup supply is to be provided for navigation lights.
SECTION C – COMMUNICATION		
16.	**Communication Equipment**	GMDSS equipment, compliant with latest IMO Regulations are to be provided. Following communication facilities are to be provided: - (a) VHF MMB DSC Tx/Rx - Two (b) Handheld VHF Tx/Rx i.a.w SQRs promulgated vide NHQ/ DNS letter no. CM/4854 dated 25 Nov 22 with VOX (for hands free usage), waterproof bag, associated battery charger and one spare battery each. - Eight (c) Portable loud hailer - Two (with spare batteries) (d) GMDSS (i) EPIRB - One (ii) SART - One (e) Call up Bells - As required (f) Sound Power Telephone - As required (g) Megaphone (fixed on mast) – Two

SECTION D – HULL		
17.	**Build Specifications**	The barge should be built to NHQ approved classification society standards (ABS/BV/DNV-GL/IRS/LR/RINA/ Class NK). The Seller is to provide a certificate from the nominated Classification Society that the barge has been built to approved Class Notations and the vessel (design and build) complies with all aspects of the Build Specifications. The Seller shall, therefore, share a copy of GLS/ Build Specifications with the nominated Classification Society and finalize the contract with Class accordingly. All Hull equipment being procured are to meet the relevant specifications under inspection/ certification by Classification Society.
18.	**Hull Material**	The barge is to be built of Class approved steel suitable for the type and function of barge
19.	**Stability**	Should be designed to have intact and damaged stability as per the Classification Society rules
20.	**U/W Hull Protection**	Cathodic Protection through sacrificial anodes is to be provided
21.	**Paint Scheme**	Suitable Class approved Marine grade paint scheme is to be applied on surfaces. Surface preparation, paint application, curing time etc. are to be ensured to the satisfaction of paint OEM and Classification Society.
22.	**Deck Covering**	Suitable Class approved Epoxy Deck covering is to be applied in the relevant internal compartments (wet spaces, main alleyways, crew compartments and bridge).
23.	**Mast**	A motorized foldable fixed mast to carry navigational lights, antenna and flags is to be provided.
24.	**Tank Capacities**	(a) Water (cargo) - 500 Tons (including fresh & feed water) (b) Fuel Oil (propulsion) - As per endurance 25% reserve (c) Domestic Fresh Water - 4.5 to 5.5 Ton (d) Lub Oil - As per endurance + 25% reserve Requirements

SECTION E – ENGINEERING, FIRE FIGHTING AND DAMAGE CONTROL		
25.	**Main and Auxiliary Machinery**	(a) Propulsion package and auxiliary machinery having indigenous product support to be provided as approved by Classification Society. main diesel engines are to be selected as per Build Specifications, to meet the speed requirement. Suitably rated indigenous main diesel engines and Diesel Generators compliant to latest IMO/ MARPOL standards and as per Class are to be provided. No acoustic enclosures are necessary for DAs. (b) Twin shaft propulsion system, with one diesel engine, reverse reduction gear box and fixed pitch propeller per shaft. Propellers are to be outboard rotating when the vessel is proceeding ahead. (c) Main and Auxiliary machinery should be capable of unrestricted operation under the following environmental conditions :- (i) Ambient air temperature : up to 45 ^{0}C (ii) Sea water temperature : up to 35 ^{0}C (iii) Maximum temperature in Engine Room : up to 55 ^{0}C (iv) Relative humidity (for Control and monitoring system only) : 100 % Condesation at 35 ^{0}C (d) Engine controls are to be as per Class Specification requirements. (e) Main and Auxiliary Machinery are to be mounted on suitable SV mounts approved by Classification Society meeting all technical requirements. Bellows/compensators are to be provided as per Classification Society rules. (f) Pumping rate for the fresh water should be 40 variable to 60 TPH. A VFD centrifugal pump, meeting Class requirements is to be provided to cater the supply of FW for smaller and larger vessels. (g) Main and Auxiliary machinery of adequate capacities meeting all technical requirements as per Classification Society are to be provided. These include the following: - (i) Diesel Alternators. (ii) EDA. (iii) Marinised AC Plants.

		(iv) Air compressors depending on the consumer requirement meeting Classification Society requirements. (v) Fuel and oil centrifuges. (vi) Fuel transfer pumps. (vii) Lub oil transfer pumps. (viii) Lub oil stripping pumps (both fixed and portable). (ix) Bilge pumps. (x) Firemain Pumps. (xi) General Service Sea Water. (xii) Tank Content Gauges. (xiii) Semi Rotary Hand Pump. (h) **Gear Box**. Reduction gear box of suitable reduction ratio is to be provided as per Classification Society rules. (j) **Steering Gear**. Steering gear should be electrohydraulic as per Classification Society norms. (k) Adequate maintenance envelope is to be provided for each engineering equipment/ system meeting Classification Society requirements. (l) Press fit/ weld seamless pipes and flangeless couplings with front and back connect are to be used for domestic fresh water, chilled water auxiliary sea water cooling systems and bilge system. (m) Machinery compartment bilge areas are to be easily accessible and provided with bilge wells and limber holes. (n) Material specifications of ship's systems to be as per Classification Society rules. (p) Aerogel based hot inslulation to be provided for all hot sections of equipment/ systems so that the lagging surface temperature does not exceed 35 0C. (q) Flow meter in suction and discharge line of cargo pump meeting Classification Society requirements.
26.	**Portable Pumps**	Following portable pumps are to be provided along with suction and discharge hoses and all the other accessories: - (a) 1 X 37 TPH (or higher) DD non-submersible pump. (b) 1 X 40 TPH (or higher) and 2 X 20 TPH MD submersible pumps.

27.	**BASCCA (EE)**	Provision is to be made for BASCCA (EE) sets for the complete crew along with suitable arrangements
28.	**Sewage Treatment Plant**	One IMP/ MARPOL approved electro-catalytic/ biological STP of adequate facility with H2S sensors (MCR and bridge) and sufficient ventilation arrangements of the compartment is to be provided.
29.	**Oily Water Separator**	One oily water separator of suitable capacity, complying with MARPOL requirement is to be provided.
30.	**Fire Fighting and Damage Control**	Following firefighting appliances should be positioned and are to be procured from vendors approved by Classification Society: - (a) Lockers are to be provided for stowage of the items. (b) Fixed fire fighting systems of machinery spaces are to be indigenous systems meeting Classification Society requirements. (c) 'Fire main system should be designed such that fire main supply is available throughout the barge, including upper decks as required, for effective firefighting'. (d) Fire hydrants are to be of Double Lug type, meeting Classification Society requirements. (e) Suitable fire alarm and warning system is be fitted. (f) The barge should be designed with adequate water tight integrity measures as mandated by Classification Society. (g) Doors and hatches should be water tight as mandated by Class Specifications. (h) A suitable flood alarm and warning system is to be fitted. (j) Fixed dewatering arrangement for machinery spaces and underwater compartments be provided, which may include eductors and pumps. (k) Other Damage Control gears as required vide Class Specifications are to be provided along with necessary stowage arrangement (Lockers/ Compartments). (l) Provision of ELSAs along with stowing arrangements (for 100% of crew). (m) Fixed/ portable arrangements for smoke clearance as mandated by Classification Society be included.

SECTION F – ELECTRICAL		
31.	**Power Generation and Distribution System**	Following electrical equipment and fittings are to be provided: - (a) **Generators**. Suitable number of generators of reputed make and of adequate capacity with 100% reserve power and necessary levels of redundancies are to be installed *iaw* Classifications Society rules. Further, one fixed air-cooled emergency diesel generator of reputed make and of suitable capacity, conforming to Class Specifications is to be provided to cater for emergency supplies to Nav Lights and communication aids. (b) **Power Supply**. Suitably rated power supplies conforming to latest Classification Society Regulations according to the load requirements of the vessel (and load chart calculations), with adequate levels of redundancies as per Class Specifications are to be provided. 230 V AC, 50 Hz, 1 Phase, 4 wire supply system derived from the primary supply, (obtained through secondary star connected transformer) with earthing of neutral to vessel's hull for domestic and COTS equipment is to be provided. (c) **Lighting**. Following general lighting and fittings are to be provided: - (i) The lighting supply would be 230V,50Hz, 1Ph and the entire vessel would be fitted with LED light fittings conforming to latest Classifications Society rules/ specifications and standards for marine use. (ii) Navigation lights should conform to latest Classification Society Regulations. (iii) Adequate number of flood lights of 200 watt rating are to be provided at suitable positions, duly complying to Class Specifications. (iv) Emergency lights fittings of 24 V complying to Class Specifications are to be installed/ fitted in each compartment. (v) Adequate number of hand held lamps with suitable length of flexible cable complying to Class Specifications are to be provided. (d) **Main Switch Board**. Main Switch Board/ Distribution Panels should conform to Class Specifications.

		(e) **Shore Supply Arrangements**. A water tight shore supply connection box (with enclosure protection IP 57 or higher) of suitable rating conforming to latest Classification Society rules/ Specifications and standards for marine use should be fitted. (f) **Batteries**. Adequate number of maintenance free batteries of contemporary technology, with suitable charging arrangement conforming to Classification Society rules are to be provided. (g) **Motors, Starters and Control Panels**. All motors, starters and control panels should conform to Classification rules suitable for marine use and procured from Class approved list of reputed vendors. (h) **Cables**. Cables for all lighting, power, shore supply and equipment are to be as approved by the Classification Society. (j) **Transformers and Rectifiers**. Transformers and rectifiers to conform to Class Specifications. (k) All electrical equipment/ machinery and fittings to be selected from the standard range and sourced from Class approved list of reputed vendors. (l) All electrical equipment shall be suitable for continuous operation in environmental conditions as follows: - (i) Ambient air temperature of 55°C for machinery / equipment located in all spaces including machinery spaces, galley and weather deck. (ii) Sea water temperature – 35°C. (iii) Relative Humidity – 100% at 35°C. (iv) Electrical cables – Rating of electric cables shall be based on an ambient temperature of 55°C for all spaces. (v) All the electric equipment shall be capable of continuous operation when fitted at any direction up to an angle of 35 deg from vertical plane passing through the center line of the equipment. (m) **Window Wipers**. Class approved Window wipers are to be provisioned.

		(n) **Cabin Fans**. Class approved industrial fans with metal casing operating on 230 V AC are to be provided in accommodation spaces, offices and manned stores/ spaces. (p) **HV Mats**. Class approved High voltage insulated synthetic mats are to be used in Switchboards, Convertor Rooms Equipment Rooms and Battery Compartments. (q) **Galley Power Supply Isolating Switch**. To ensure safety of galley spaces, galley equipment are to be controlled by a single isolating switch to be located at a readily accessible position outside the galley, adjacent to the main entrance. The same should comply to Classification Society rules.
32.	**Controls**	Use of COTS components in basic machinery control on the Bridge to be ensured.
33.	**Ventilation**	(a) Adequate forced ventilation is be provided in machinery spaces, accommodation areas and in the Bridge/Wheel House. (b) Engine room is to have forced supply and exhaust ventilation systems. (c) WCs, galleys and showers are to have forced exhaust and forced supply. Exhaust is to be of double the capacity of supply ventilation.
SECTION G – ACCOMMODATION AND HABITABILITY		
34.	**Accommodation**	Following accommodation and associated facilities be provided: - (a) Two cabins with attached WC and bath for the Master and the Engineer. (b) One four bunk cabin for Engine Room crew. (c) One six bunk mess for deck crew. (d) Two sets of separate WCs and showers for the crew. (e) Split ACs for crew accommodation and Wheel House.
35.	**Galley**	(a) A common galley is to be provided for the Master, Engineer and crew of nine (09) personnel. (b) One pantry with serving bay is to be provided. A dining hall with seating capacity of six (06) personnel is to be provided. Separate enclosures for Master & Engineer and crew are to be provided.

		(c) The galley should be modular and equipped with modern equipment. These should include the following: - (i) Electric cooking Range with Two Hot Plates (of 5 kw each). (ii) One Oven (of 3 kw). (iii) One Frost Free Refrigerator of 350 Its. (iv) Electric Kettle. (v) Hot Case. (vi) Hot water geyser/boiler. (vii) Water Cooler with Aquaguard Type Water purification system. (viii) Stainless steel sink with a Fresh Water nickel silver tap with splash back and drain board. (ix) SS rack type shelves mounted above serving hatch on the bulkhead common with the dining hall. (x) One salt water tap is to be provided 500 mm above the deck, with a sill around, to restrict water splash. (d) One wire mesh locker for storage of potato and onions on upper deck. (e) One provision store room and a stainless steel top table, with a large provision cupboard and metal drawers.
36.	**Navigational Equipment**	Following Class approved Navigational aids to be provided:- (a) Two GPS (b) One AIS (c) One Nav Radar (d) Echo Sounder (e) One Fast Settling Gyro/ Electronic Compass
37.	**Recreational Facilities**	Three smart colour LED TVs (one each for the Master and Engineer and the other for the crew) and SRE to be provided.
SECTION H - SEAMANSHIP, LIFE SAVING AND SAFETY EQUIPMENT		
38.	**Seamanship Fittings**	(a) **Anchor and Chain Cables**. Anchor chain cables and accessories are to be *iaw* NCD 3909.

		(b) **Anchor Windlass**. As per Classification Society rules. (c) **Mooring Towing and Berthing Gears**. As per Classification Society rules. (d) **Awnings**. Two sets of PVC coated nylon fabric awnings with portable stanchions and stays are to be provided over locations indicated. (e) **Guard Rails**. Suitable guard rails for safety of personnel are to be fitted all around the barge.
39.	**Life Saving**	(a) One Gemini (with OBM) with suitable lowering and hoisting arrangements, viz, Electrically operated Single Arm Davit of SWL 500 Kgs is to be provided. (b) **Life Rafts**. 2 x 10 men life rafts. (c) **Life Jackets**. Life jackets for 100 % crew plus 40% reserve.
SECTION J – ARMAMENT		
Not Applicable		
SECTION K – MISCELLENEOUS		
40.	**Documentation**	Complete inventory of spares and the relevant documentation of equipment and machinery are to be provided. 'As Fitted drawings, maintenance, repairs and refit documents, Catalogue of spares / D 787 for OBS and B&D inventory and Passports logs for all the machinery are to be provided, along with the barge. A detailed Engineering Maintenance Schedule (Equipment and Systems) should be prepared and submitted four months prior delivery. The final revised Maintenance Schedule is to be available at the time of delivery of the vessel. The documentation is to be provided in IETM level II format.
41.	**Test Equipment**	Test equipment *iaw* Classification Society rules
42.	**On board and Outfit Spares**	The maintenance tools, test equipment and software (as applicable) used for onboard repair/ maintenance are to be supplied by the vendor as part of OBS. The OBS supplied must cater for breakdown maintenance and routines falling due within two years after delivery of the vessel. The OBS must be recommended based on the likely consumption rate of the spares and on the exploitation pattern of the system/ equipment. Spares are to be supplied in standard metal

		boxes, duly preserved for long term duration of at least two years.
43.	**B & D Spares**	The vendor should forward recommended list of B&D Spares for the equipment/ systems to sustain five years of exploitation. The B&D spares list should comprise long lead time spares, insurance spares and OBS replenishments for a period of five years post delivery of the vessel.
44.	**Life Cycle Product Support**	The supplier shipyard is to submit a scheme to provide product support for a minimum period of 20 years to be reckoned from the date of delivery of the barge. This could be in the form of a contractual commitment from various equipment suppliers. In case any equipment is likely to become obsolete, the manufacturer should be committed to give a requirement of 'Life Time Buy' of spares well in time/ atleast two to three years prior declaration of obsolescence. The manufacturer should also ensure supply of such items prior discontinuation of production facilities.