

PROCUREMENT OF FOUR IN NOS 500 TON SELF PROPELLED FUEL BARGES

1. The Ministry of Defence, Government of India, intends to procure four in nos 500 Ton Self Propelled Fuel Barge for the Indian Navy (*IN*) from Indian Shipyards under Buy (Indian-IDDMM) category of Defence Acquisition Procedure (DAP) 20 uploaded on Ministry of Defence website www.mod.nic.in.
2. The intended use of the barge (Operational Requirement) are specified in brief and placed at **App 'A'** of this document. Further, detailed specification will be given in the Request for Proposal (RFP) which will be issued to Shipyards who would respond to the instant procurement and submit their willingness for participation, after verifying their credentials and capabilities to construct the Barge i.a.w Chapter XII of DAP 20.
3. Shipyard can communicate with Project Officer/ Cdr(SP)- Yardcraft Group at Directorate of Ship Production, IHQMoD(N), Telephone no 011-26886433 to seek clarifications, if any, on the technical aspects of the barge while responding to instant procurement.
4. The solicitation of offers will be as per Standardised RFP on Shipbuilding uploaded on Ministry of Defence website www.mod.nic.in , which is 'Single Stage-Three Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting documents pertaining to Financial Assessment Parameters, Technical and Commercial offers together, but in three separate sealed envelopes. The validity of Commercial offers would be at least 18 months from the date of submitting of offers.
5. Budgetary quote of the Barge with detailed break up of costing is to be submitted i.a.w format indicated at Standardised RFP on Shipbuilding uploaded on Ministry of Defence website www.mod.nic.in.
6. The anticipated period for delivery of first barge shall be 18 months followed by each subsequent barge at an interval of three months at Visakhapatnam (03 in nos) and Kochi (01 in nos) as stipulated in the RFP.
7. The Technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP. Prior to commencement of evaluation by TEC, assessment of Financial Qualification Parameters would be undertaken by the Financial Parameter Evaluation Team (FPET), constituted by SHQ i.a.w DAP 20.
8. Amongst the Shipyards cleared by TEC, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate Contract.

Procedure for Response

9. The shipyard has to indicate their compliance / acceptance to the instant procurement document in their response.
10. Willingness to participate in the bid for procurement of the barge should be dispatched to the directorate at the below mentioned address:-

The Commodore (SP)
Directorate of Ship Production

8th & 9th Floor, Chanakya Bhawan,
Chanakyapuri,
New Delhi- 110021
Tele: 011-26886433

11. Following details/documents to be submitted with willingness certificate for undertaking Capacity Assessment i.a.w DAP 20:-

- (a) Complete address and contact details of the shipyard for communication.
- (b) Type of Industry.
- (c) Details of nodal contact person with designation.

12. Last date of acceptance of filled form is 21 May 21. The Shipyards short listed for issue of RFP would be intimated.

13. The Government of India invites responses to this request only from Indian Shipyards. The end user of the barge is the Indian Navy.

14. This information is being issued with no financial commitment and the Ministry of Defence reserves the right to change or vary any part thereof at any stage. The Government of India also reserves the right to withdraw it, should it be so necessary at any stage. The acquisition process would be carried out under the provisions of DAP 20.

GENERAL

1. **Aim** Staff requirements for 500 T self-propelled fuel barge capable of replenishing ships and submarines in harbour and at anchorage with LSHSD and AVCAT.
2. **Functions**
 - (a) Replenishing ships and submarines in harbour and at anchorage with LSHSD and AVCAT.
 - (b) Receive LSHSD and AVCAT from ships and submarines.
3. **General Remarks**
 - (a) The barge is to be built as per rules and regulations of an *IN* approved Classification Society. The notation for the vessel and QAP for ship building including trials shall be finalised in consultation with IHQ (N). Classification Society is to certify that the design of the yardcraft proposed by the yard covers all the requirements of build specs.
 - (b) A certificate is to be provided by the Classification Society conforming that Class Notations have been provided for all functional requirements indicated in RFP.
 - (c) SS 316 grade Stainless Steel (SS) is to be used for all hull fittings on the weather deck.
 - (d) The barge should be self-sufficient as far as pumping arrangements for fuelling and de-fuelling of ships and submarines are concerned.
 - (e) The barge should be able to sustain itself at sea for a minimum of seven days while transiting from one port to another.
 - (f) The barge should have a configuration of 10 tanks for an overall capacity of 500 T Fuel Oil (cargo).
 - (g) The barge should be capable of supplying light stores ie, fresh and dry provision to ships upto 500 kg (capable of being lifted manually), when required.
 - (h) The barge should have minimum 20 years life.
 - (j) The barge should comply with all the latest requirements of IMO conventions, MARPOL, MEPC and SOLAS regulations as applicable on date of issue of RFP.
 - (k) The barge should have a refit cycle of 2 years with inter docking interval of 02 years and SR of two months after each ops cycle.

4. **Speed** (a) Maximum speed of 12 kn upto 85% MCR.
(b) Sustained - 10 kn.
5. **Dimensions** The principle dimensions of the barge should be as follows:-
(a) Length - Not less than 45 m
(b) Beam (extreme) - Not less than 8 m
(c) Draught (Deep) - Not more than 4 m
6. **Endurance** 800 nm.
7. **Sea State** Should be able to operate upto Sea State 3 and survive upto Sea State 5.
8. **Crew** 15
9. **Operating/ Environmental Conditions.** All equipment should be marinised and capable of performing under the following conditions:-
(a) Air Temperature - upto 45 °C.
(b) Average Machinery - upto 55 °C.
Temperature
(c) Sea Water Temperature - upto 40 °C
(as per NES 02-102).
(d) Relative Humidity - 95 % condensation at temp of 35 °C.

NAVIGATION

10. **Bridge** Bridge should have large inclining windows for all around visibility to assist maneuvering alongside. All front windows should have Clear View Screen mechanism and other windows should have either Clear View Screen mechanism or marinised Window Wipers. Design of Bridge should be COLREG complaint.
11. **Mast** Motor operated foldable mast is to be provided to restrict the height of the barge from water level. This Mast should be capable of carrying navigational lights and flags. Maximum height above lowest water line to mast top in folded condition should be 6.6 m.
12. **Radar** One 'I' band COTS Navigation radar with ECDIS functionality is to be provided in twin MFC configuration. The radar should be integrated with GPS and AIS Trans receiver.

13. **Echo Sounder** One COTS Echo Sounder is to be provided.
14. **Gyro** One Gyro is to be provided with repeaters in Bridge, Bridge Wings and steering positions.
15. **Magnetic Compass** One transmitting Magnetic Compass is to be provided on the bridge with repeaters on Bridge Wings.
16. **GPS** One SBAS enabled GPS.
17. **AIS** One AIS.
18. **GMDSS** Following should be provided:-
- (a) **EPIRB**. EPIRB operating on 406 MHz.
 - (b) **SART**. One SART.
19. **Fog Horn** Two electric fog horns are to be provided as per Classification Society requirement on top of the wheel house with local operating controls and provision for remote operations from the bridge.
20. **NAV Lights** As per International Regulation for Prevention of Collision at Sea (IRPCS) – 1972. Battery and backup supply is to be provided for the navigation lights.

COMMUNICATION

21. **Communication** Following communication facilities are to be provided:-
- (a) Latest VHF MMB Tx/Rx with DSC - Two. (25W). IMO Regs for GMDSS
 - (b) VHF HH radio set (Motorola, latest version) - Six.
 - (c) Megaphone (Fixed on Bridge Top) - Two.
 - (d) 5" Hand signaling Lantern with stowage box - One.
 - (e) Portable loud hailers - Two.
 - (f) Call up bells - As required.
 - (g) Sound Power Telephone - As required.
 - (h) Blue Ensign Flags - Four

(j) Basic Communication Flags and Shape - One Set.

22. **Internal Communication** The following internal communication systems are to be provided:-

(a) Main Broadcast System, which should be audible on upper deck and in all compartments (for general and emergency announcements).

(b) Intercom between:-

(i) Bridge, Pumping Point, Forecastle and QD.

(ii) Bridge, Engine Room, ASP and Crew Mess.

(c) Voice pipe in Engine Room, Bridge and Bridge Top for emergency communication.

HULL, MACHINERY, FIRE FIGHTING AND DAMAGE CONTROL

23. **Hull** (a) **Hull Form**. The barge is to be of mono hull construction of a proven design either existing in service or supported by relevant calculations in case of a new design meeting all the requirements specified in the RFP. The hull design would be scrutinized by IHQ (N) during TEC.

(b) **Construction Material**. The main Hull and superstructure should be of all welded steel of IS 2062 specification (Grade E250/Quality BR with impact test required/killed).

(c) **Plate Thicknesses & Scantlings**. Corrosion allowances specified in Classification Society rules are to be provided.

(d) **Hull Strength**. The design of hull and hull members should be undertaken as per Class rules applicable for the role of the vessel. Structural analysis including Direct Strength Analysis (DSA) should be carried out to ensure that hull is designed for the intended area of operation. The necessary structural analysis/calculation would be vetted by Classification Society. All Structural Bulkheads, Decks, Super Structure, Structural Closures, Mast, Foundation etc, should be as per Class requirements.

24. **W/T & GT Integrity** (a) Collision bulkhead is to be provided in accordance with class rules and should extend to the uppermost continuous deck.

(b) No passageways through watertight bulkheads are to be provided below main passage deck/damage control deck.

(c) All openings and piercings below the damage control deck in main bulkheads are to be fitted with a permanent means of watertight closure.

(d) All W/T doors and hatches are to be iaw Class rules. The min size of EES/hatches should not be less than 600x 600/dia 600 mm.

(e) Water pressure Tests and Air Pressure Tests are to be undertaken iaw Class rules.

25. **Fire Resistant Material** Structural fire protection and fire zone boundaries are to be provided as per SOLAS/ Classification Society rules.
26. **U/W Hull Protection** Sacrificial Anodes as per latest IN specifications are to be provided on underwater hull and appendages. Anodes are to be fitted in bilges, Sea chest and other areas where sea water tends to accumulate. In addition zinc rings are to be fitted at the neck of the sea tubes near the flange and also in the overboard discharges.
27. **Paint Scheme and Deck Covering** Paint Scheme and Deck covering scheme should be i.a.w latest *IN* specifications.
28. **Ventilation and Air Conditioning.** Ventilation and Air Conditioning is to be provided, as follows:-
- (a) Marinised Air Conditioning units should be provided for all living spaces including bridge.
 - (b) Ventilation in all required spaces should be provided as per Classification Society rules.
 - (c) Ventilation arrangements in all air conditioning and refrigeration in machinery compartments are to be iaw Def Stan 02-102 (Part 3).
 - (d) Sea water heat exchangers are to be compliant with Def Stan 02-329.
29. **Stability** The barge should satisfy stability requirements as per IMO/SOLAS and Class Rules.
30. **Inclining Experiment** Inclining Experiment should be undertaken as per latest NCD 0104. Inclining Experiment and stability calculation post Inclining Experiment needs to be submitted to IHQ MoD (N) for approval. Stability Booklet is to be prepared i.a.w latest NCD 0106.

31. **Ships Husbandry Tools.** Ship's Husbandry Tools are to be provided iaw IHQ MoD (N) promulgated list.
32. **Capacities**
- (a) Fuel Oil (cargo) - 500 Ton (including LSHSD and AVCAT)
 - (b) Fresh Water (cargo) - 50 Ton
 - (c) Fuel Oil (propulsion) - As per endurance + 25% reserve
 - (d) Domestic Fresh Water - 4.5 to 5.5 Ton
 - (e) Lub Oil - As per endurance + 25% reserve
33. **Main and Auxiliary Machinery** Main propulsion and auxiliary machinery is to be as per Classification Society rules. Engine controls, using modern, indigenous, COTS component, are to be provided in the Bridge and Engine Room. The engines should comply with IMO/ MARPOL requirements. Salient aspects of Main and Auxiliary machinery should be:-
- (a) Propulsion package and auxiliary machinery having indigenous product support are to be provided.
 - (b) Twin shaft propulsion system with one diesel engine driving each shaft, reverse reduction gear box and fixed pitch propeller per shaft, with shaft locking arrangement is to be provided.
 - (c) Auxiliary machinery is to be provided as required, to meet Class requirements.
 - (d) Bridge and Engine Room should have Engine controls as per Class requirements.
 - (e) Main and auxiliary machinery are to be mounted on anti vibration mounts.
 - (f) **Gear Box**. Reverse reduction gear box of suitable reduction ratio are to be provided. Gear Box are to be suitable to operate for 48 hours when submerged in sea water upto top of output shaft.
 - (g) **Steering Gear**. Electro hydraulic Steering gear with VME 64 controls based with open architecture and power units capable of generating required torque to be provided conforming to NES 02-339.

(h) **AVCAT/LSHSD/Water Separator.** Oily water separator is to be guided by Def Stan 02-322 and is to conform to latest IMO/MEPC regulations in force are to be provided in AVCAT and LSHSD fuel systems.

(j) **Strainers/Filters.** Portable strainers with 200 micron mesh size are to be provided.

(k) **Flow Meters.** The flow meters should be suitably installed on containing pipe length to cater for laminar/turbulent flow conditions.

(l) **Blow Through System.** Blow Through System is to be provided to facilitate blow through after fuelling of AVCAT and LSHSD.

(m) **Marinised Package AC Plant.**

(i) AC Plant are to be provided with a local control panel supplied by the OEM catering for control and monitoring under all regimes of operation.

(ii) Remote monitoring of the AC plant is to be provided through suitable link.

(n) Following auxiliary machinery/equipment of adequate capacity are to be provided:-

<u>Ser</u>	<u>Equipment</u>	<u>Qty</u>
(i)	Diesel Generator of adequate capacity	- 02
(ii)	Emergency Generator set of adequate capacity to take the load iaw INBR 312(Rev 2010)	- 01
(iii)	Air Compressor (MD)	- 02
	Air Compressor (DD)	As per Class requirement
(iv)	Bilge/Ballast Pump	- 02
(v)	Dirty Oil Pump	- 02
(vi)	Fresh water system comprising of following should be provided:-	
	(aa) Fresh water pumps	- 02

	(ab) Hydrophore tank	-	01
(vii)	Fuel oil pump	-	02
(viii)	Centrifuge:-		
	(aa) Fuel Centrifuge	-	01
	(ab) Lub Oil Centrifuge	-	01
(ix)	General Service Pump/Fire Pump	-	02
(x)	Sewage Treatment Plant with H ₂ S sensors (02) with Audio & Video alarms in Bridge	-	01
(xi)	Cargo Pumps:-		
	(aa) LSHSD (with Variable Frequency Drive to vary the fuel pumping rate from 0-300 TPH)	-	03 (02 Main 150 TPH+ 01 Stand by 150 TPH)
			01 (50 TPH)
	(ab) AVCAT	-	
(xii)	Semi rotary Hand Pump of adequate capacity	-	02
(xiii)	Lub Oil Pump of adequate capacity	-	02
(xiv)	Stripping Pump of adequate capacity	-	01
(xv)	Tank Content Gauges/Level indicators with Audio visual alarm for 95% filling up of tanks meeting Classification Society Requirements.	-	01 System

(p) Work bench with bench vice, fixed power grinder and generic tools should be provided.

(q) Provision for recirculation of AVCAT from tank to tank with adequate redundancy along with pump, associated filters, separators and absorbers should be provided.

34. Controls

Basic machinery control in the bridge is to be provided iaw class requirement.

35. Dewatering Arrangement

Portable pumps are to be provided, as follows:-

(a) 01 x 37 TPH DD Emergency Fire Pump.

(b) 02 x 20 TPH MD Submersible Pumps.

(c) 01 x 40 TPH MD Submersible Pump.

(d) Portable starters are to be provided with submersible pumps.

36. Fire Fighting and Damage Control

The Damage Control and Fire-Fighting arrangements compatible to the equipment standardised by *IN* are to be provided. All equipment should meet SOLAS and Classification Society requirements. In addition, following should be provided:-

(a) FM 200 Fire Fighting system for fire protection in main and auxiliary machinery spaces is to be provided. The same should be as per DME SOTR for FM 200 fixed fire fighting system.

(b) Fire main rings are to be designed IAW INBR 312. Class approval compensators are to be provided at suitable suction & discharge of each fire pump.

(c) A dedicated fixed foam based fire fighting system is to be provided on top of fuel tanks with fixed foam tank of adequate capacity for fighting fuel fire.

(d) Fire-fighting and damage control equipment are to be provided as per Classification Society norms. List of items to be supplied would be indicated in GLS. Specification of portable fire fighting and damage control equipment is to be as per CNAL.

(e) Lockers and stowage arrangements (spread across the vessel) should be provided for stowage of FF & DC gear.

(f) Automatic Fire Detection and alarm system should be provided in all compartments as per Classification

Society norms along with a centralised monitoring panel provided in the bridge.

(g) The machinery compartments and fuel tank areas should be provided with the following:-

(i) Suitable fire fighting arrangement for machinery fire.

(ii) Foam Inlet Tubes for fighting Bilge Fire.

(iii) Ladder sprinkling and cooling system.

(h) Flood warning system should be provided in all compartments located below waterline other than tanks, along with a centralised monitoring panel in the bridge.

(j) Minimum four BASCCA sets should be provided.

(k) BASCCA (EE)/ELSA sets should be as per specification prescribed by *IN* for 150% crew strength.

(l) Escape hatches in machinery compartments and mess decks with escape route marking should be provided.

(m) Four pairs of Bristol Fire Fighting suits with all accessories should be provided.

(n) Separate Fire Fighting System for galley meeting Classification Society requirements should be provided. Additionally, Portable K/ F - Class Galley Fire extinguishers should be provided.

(p) A charging panel should be provided from the ship's HP air system capable of charging two BASCCA sets simultaneously upto 300 bar.

(q) One portable Diesel driven compressor suitable for charging of BA sets should be provided. Specification for the portable compressor should be as per approved SOTRs promulgated by *IN*.

(r) Fixed dewatering arrangement should be provided as per Classification Society Rules.

(s) Fixed bilge eductors should be provided in all underwater compartments.

(t) Fixed shoring arrangement should be provided in hatches of all underwater compartments that do not have direct access to weather deck.

(u) Surveillance and monitoring system, such as CCTV should be provided to monitor all unmanned compartments and hazardous areas.

ELECTRICAL

37. Power Generation and Distribution

The entire electrical system, machinery and associated system should conform to Classification Society Rules.

(a) **Generators**. “Two numbers of Diesel Generators (DGs) conforming to the Classification Society Rules of equal capacity shall be provided with each DG capable of meeting maximum electrical load satisfactorily, under various operating conditions of the Barge and with one DG remaining as standby. The DG shall be self-regulated and self-excited. The Loading of DGs should not be more than 80% of the rated capacity, allowing for a growth margin of 10%. An electrical load analysis chart justifying the proposed capacities of the DGs shall be prepared by the builder and submitted along with the technical offer for the barge”.

(b) **Power Supply**. Following power supplies are to be provided :-

- (i) 415V AC, 3 Phases, 50 Hz, 3 Wire.
- (ii) 230V AC, Single Phase, 50 Hz, 4 wire for domestic and portable equipment.
- (iii) 230V AC, Single Phase, 50 Hz, 2 wires for lighting, communication and navigation system.
- (iv) 24V DC.
- (v) Converted/suitable supply for welding rectifiers and all work shop machines.

(c) **Lighting**. Following lighting conforming to Classification Society norms/specification are to be provided :-

- (i) LED based Lighting for general illumination.
- (ii) Navigational lighting conforming to IRPCS- 72 Regulations.
- (iii) Flood Lights.
- (iv) Emergency lights.

(v) Search & Signaling lights.

(vi) Six hand lamps.

(vii) Flame Proof light fitting in Battery Charging Rooms.

(d) **Main Switch Board**. Suitably rated switch board should be provided in accordance with Classification Society Specification for distribution board (DB)/ navigation light panel.

(e) **Shore Supply Arrangements**. Water tight (IP 57) shore supply connection boxes of 415 V, 3 Phase, 50 Hz should be fitted on weather deck at an appropriate position on both Port and Stbd sides. The shore supply box should be connected by permanent cables to the switch-board and should have suitable terminals for connecting flexible cables upto 100 meters length. Shore supply Cable is to be provided with securing drum/reel. A phase sequence indicator should also be provided.

(f) **Batteries with Charging Arrangement**. Maintenance free batteries of adequate capacities and Battery Bay with requisite battery charging arrangement as per Classification Society regulations are to be provided. Switch-board should have internal rectifier mechanism so that batteries of engines and diesel alternators are automatically charged with shore supply.

(g) **Motors, Starters and Control Panels**. Direct on line starters should be provided for all motors below 5 HP. Star Delta starters are to be provided for motors of 5 HP rating and above incorporating under voltage, over current, short circuit, single phase protection and connection for the mister provided in all the motors. All motors should be suitable for marine use and conforming to Classification Society Rules.

(h) **Cables**. Low fire hazard cables [EBXL cables] as per Classification Society rules should be used.

(j) **Transformers and Rectifiers**. Transformers and rectifiers are to be provided as per the Classification Society Requirement.

(k) **Window Wiper**. Window Wiper conforming to Classification society Rules shall be provided.

(l) **Cabin Fan**. Cabin fans of suitable sizes from approved sources operating on 230 V AC are to be

provided in accommodation spaces, offices and manned stores/spaces.

(m) **HV Mats.** High voltage insulated synthetic mats conforming to IS-15652-2006 are to be used in Switchboards, Converter Rooms, Equipment Rooms, Battery Compartments and HF Compartments.

(p) **Galley Power Supply Isolating Switch.** To ensure safety of galley spaces, galley equipment are required to be controlled by a single isolating switch, is to be located readily accessible position outside the galley, adjacent to the main entrance.

(q) **Cat 'A' Compartment.** Design of NECP-500 compliant Cat 'A' compartment should be based on NEC-SPC-2240 and NEC-HDBK-160".

ACCOMMODATION AND HABITABILITY

38 Accommodation

(a) Fully air conditioned accommodation with suitable marinised ACs, are to be provided as follows:-

(i) Two cabins with attached WC and bath (with geyser) for the master and the engineer.

(ii) One six bunk cabin for engine room crew.

(iii) One four bunk mess for deck crew.

(iv) One four bunk mess for service crew.

(b) Associated facilities are to be provided as follows:-

(i) Two sets of Separate WCs.

(ii) Urinals co-located outside the WC.

(iii) Showers (with geyser) for the crew and service crew.

(iv) All bathroom fittings are to be of SS 316 grade Stainless Steel.

39 Galley

(a) A common galley is to be provided for Master, Engineer and crew catering for 20 personnel. The galley is to be equipped with the following:-

(i) Smoke/Fire sensors.

(ii) The hot plate On/Off indication lamps panel fitted in the galley with indicator outside the galley as well as on the Bridge.

(b) All galley fittings are to be of SS 316 grade Stainless Steel.

(c) One pantry with serving bay is to be provided. A dining hall with seating capacity for 15 personnel is to be provided with separate enclosures for Master and Engineer.

(d) The galley should have the following facilities:-

Ser	Description	Qty.
(i)	Electric cooking Range with Two Hot Plates (5Kw)	One
(ii)	Microwave Oven (3 Kw)	One
(iii)	Refrigerator 230 lts capacity	Two
(iv)	Electric Kettle	One
(v)	Hot Case	One
(vi)	Hot water geyser/ boiler	One
(vii)	Water Cooler of suitable capacity with RO based water purifier.	One
(viii)	Deep Freezer	One
(ix)	Induction Heater	Two

(e) Stainless Steel sink with a fresh water nickel silver tap with splash back and drain board.

(f) Stainless Steel racks in serving bay.

(g) One each salt water and fresh water tap is to be provided 500 mm above the deck with a sill around to restrict splash.

(h) Galley utensils and accessories required for functioning of galley for 15 personnel.

(j) One wire mesh locker for storage of potato and onions on upper deck.

(k) One provision store room and a stainless steel top table with a large provision cupboard and metal drawers.

(l) Adequate crockery and cutlery for 20 personnel.

40 Recreational and Office Facilities

(a) Three latest Smart TVs of 42 inch or more, one each for Master's and Engineer's cabin and one in the dining hall are to be provided. SRE is to be provided in living spaces, dining hall and bridge.

(b) Two each carom and chess board are also to be provided.

(c) Two latest desk top computers with computer tables, operator's chairs, laser jet printers and UPS are to be provided for rendering returns, processing job cards and other official jobs.

SEAMANSHIP, LIFE SAVING AND SAFETY EQUIPMENT

41. Seamanship Fittings

(a) **Anchor, Chain Cable & Fittings**. Anchor and anchoring arrangement are to be as per Classification Society Rules. Anchor chain cables and accessories should be in accordance with latest NCD 3909.

(b) **Anchor Windlass & Fittings**. As per Classification Society requirements.

(c) **Towing and Berthing Gears & Fittings**. Towing and berthing arrangements are to be provided as per the Classification Society Requirements. In addition, following are to be provided:-

(i) At least four each bollards on port and starboard side.

(ii) Fairleads on either side of bollards.

(iii) Cleats and stag horns for rigging fenders.

(iv) Bow fairlead or Stem bullring.

(v) Following suitable for size and tonnage of the vessel:-

(aa) Two sets of Six HMPE Berthing hawsers.

(ab) One multiplaited Polypropylene towing hawser.

(vi) Towing pendant of Steel Wire Rope.

(d) **Awnings**. Awning arrangement is to be provided at bridge wings, quarter deck, cable deck and any other location indicated by IHQ MoD (N). Following are to be provided to cater for awning arrangement:-

(i) Two sets of PVC coated nylon fabric awnings.

(ii) Portable stanchions and stays.

(iii) Ridge rope and other accessories required as per design for rigging of awning.

(e) **Weather Covers.** Two sets of weather covers for all weather deck fittings and equipment should be provided.

(f) **Fendering.** Fendering arrangement should be provided to avoid metal to metal contact of the hull whilst alongside ships/submarines as follows:-

(i) Heavy duty non inflatable type fixed fenders made of special rubber conforming to Class Specifications should be provided as follows:-

(aa) Along the hull above waterline.

(ab) Underwater hull (Underwater Fendering to cater for berthing alongside Submarines).

(ac) Suitable clamp arrangement is to be provided for fixing of these fenders to hull.

(ii) Round Tyre type fenders with fixed clamp arrangement.

(iii) Four each light weight and heavy duty portable pneumatic fenders.

(iv) Rubber quality of all inflatable fenders supplied and non-inflatable fenders fitted should be such that fenders, during use would not leave marks and discolor the ships side of vessels.

(g) Two brows of suitable dimension and strength with stowage arrangement are to be provided.

(h) Four lockers (with Marinised Stainless Steel hinges of grade SS 316) are to be provided at suitable location on weather deck.

(j) Scuppers are to be provided at suitable location for draining out of rain water from decks.

42. **Life Saving Equipment**

(a) Life saving equipment is to be provided as per SOLAS.

(b) **Life Rafts.** 2 x 20 men life rafts, one each on port and stbd side, are to be provided.

(c) **General Service Life Jackets (GSLJs).** 25 General Service Life jackets are to be provided; specification of GSLJ is to be iaw latest NCD 3925. **(DNA)**

(d) **Hazardous Duty Life Jackets (HDLJs)**. Six Hazardous Duty Life jackets are to be provided; specification of HDLJ is to be iaw latest NCD 3926.

(e) **Life Buoy and MOB Markers**. Life buoys and MOB markers are to be provided on upper deck as follows:-

(i) One Lifebuoy on Foxle.

(ii) One Lifebuoy each on either side at midship.

(iii) One each Lifebuoy with Man Overboard Light and Smoke Markers on both Bridge Wings and on QD.

(f) Specification of Man Overboard Light and Smoke Markers should be iaw Article 06033 of BR 67/2009 (Admiralty Manual of Seamanship).

43. **Safety Equipment.**

The following safety equipment for marine use are to be provided:-

- (a) Safety Helmets - 11
- (b) Ear Plugs - 11 pairs
- (c) Safety Gloves - 25 pairs
- (d) Anti Splash Goggles - 4
- (e) Dust Protectors - 11
- (f) Safety Harness - 4

44. **Medical Facilities**

First aid boxes one each in Crew Mess, Bridge, Engine Room and Master's Cabin should be provided. One each Neil Robertson Stretcher and ambulance stretcher should be provided.

MISCELLANEOUS

45. **Cargo Storage**

(a) **Configuration**

(i) LSHSD - 450 T

(ii) AVCAT - 50 T

Note:-

(a) LSHSD and aviation fuel should be separated by a cofferdam or air space.

(b) 50 T fresh water is to be provided in each configuration.

(c) 25 T storage space for provisions, spares and naval stores in each configuration.

(d) Bonding and earthing arrangements are to be provided for all tanks.

(Note:- The configuration of the tank for LSHSD & AVCAT can be amended as per the requirement in the RFP)

(e) Any of the aforesaid configurations may be adopted as per the specific requirement of the vessel.

(f) In case of Configuration VI, one 50 T tank should be divided into two sections.

(g) Separate Flow meters for LSHSD and AVCAT to be provided with capacity of reading minimum 0.1 KL. Two flow meter to be provided as spare.

46. Rate of Filling

(a) The fuel barge should be able to embark fuel at the rate of 300 T per hour.

(b) It should be able to fuel other ships upto the rate of 300T per hour at 25 m delivery head.

(c) Inboard end coupling for replacement of fuel should be compatible with 6" and 4" composite light-weight fuelling hoses.

47. Fuelling Hoses

48 Mtr (6M x 8 Nos) fuel hoses of 6" dia for diesel and 48 Mtr (6M x 8 Nos) of 4" dia for AVCAT to be provided. Suitable covered stowage space with securing arrangement for the hoses is to be catered on upper deck.

48. Documentation

(a) Complete inventory of spares and the relevant documentation of equipment and machinery is to be provided in hard and soft copies in CD. Documents to be supplied as per class specification. 'Ship fit' and as fitted drawings, maintenance, repairs and refit documents, Catalogue of spares/D 787 for OBS and B&D inventory, are to be provided alongwith the barge.

(b) Documentation for all equipment and system shall be supplied in IETM level 4 format and in accordance with the latest version of EED-S-048, DME 452 and NCD 1470.