REQUEST FOR INFORMATION (RFI) FOR CONSTRUCTION OF ONE NATIONAL HOSPITAL SHIP (NHS) FOR INDIAN NAVY

1. The Ministry of Defence, Government of India, intends to procure **One** National Hospital Ship (NHS) for the Indian Navy (*IN*) from registered Indian Shipyards.

2. This Request for Information (RFI) consists of three parts as indicated below:-

(a) **Part I**. The first part of the RFI incorporates operational characteristics and features that should be met by the NHS. A few important technical parameters of the proposed NHS are also mentioned.

(b) **Part II**. The second part of the RFI states the methodology of seeking response of Indian Shipyards. Submission of incomplete response format will render the Shipyard liable for rejection.

(c) **Part III**. Guidelines for Framing Criteria for Vendor Selection/Pre-Qualification.

PART- I

3. **The Intended Use of NHS (Operational Requirements)**. The National Hospital Ship would be capable to provide Primary and Secondary care to the patients onboard the ship.

4. **Quantity Required and Anticipated Delivery Timeframes**. One National Hospital Ship is proposed to be acquired. The anticipated delivery timelines for the first vessel is maximum of 48 months from the date of contract. Vendors are to indicate their comments on the build period and timelines for delivery.

5. **Important Technical Parameters**.

(a) Details of the NHS are specified in brief in the Operational Technical Specifications placed at **Appendix A** of this document. Detailed specifications will be given in the Request for Proposal (RFP) which will be issued to Shipyards who have responded to the Request for Information (RFI), after verifying their credentials and capabilities to construct the NHS. Feasibility to build the ship with specifications indicated at **Appendix A** is to be submitted by the Shipyard.

(b) Functional and Detailed design of NHS will be undertaken by shipyard

iaw Para 67 of Section 'B' of Chapter XII of DAP 20.

(c) The ship would carry a descriptive notation of a "Hospital Ship". For assignment of this descriptive notation, the design aspects like General Arrangement, ventilation arrangements, pantry, galley, laundry, sanitary services, fire safety, evacuation routes and Life Saving Appliances arrangements are required to meet class requirements. For ensuring correct design philosophy for hospital spaces, the shipyard is to hire a hospital design consultant to evolve design of the hospital spaces iaw the class requirements, in consultation with team of Subject Matter Experts nominated by IHQ MoD (N)/ DGMS(N). The draft design should be forwarded to IHQ (DND/DGMS) for approval and finalized only after incorporating recommendations of IHQ/ (DND/ DGMS).

(d) The list of Buyer (MoD (Navy)) Nominated Equipment envisaged for NHS are placed at **Appendix B.**

(e) Shipyards are to submit option of providing upcoming technologies, if any, which will meet the intended purpose of the NHS and enhance its employability. The detailed design of the ship should incorporate high degree of automation and efficiency enablers. Shipyard need to specifically indicate the degree of automation, details of such efficiency enablers and which new technology will be offered with the NHS.

(f) Agreement and / or collaboration with firms with regard to functional & detailed design and Production Monitoring Technology to be indicated and clearly highlighted in the response. The details of Detailed design ToT, Construction ToT, and maintenance ToT, if required, be also commented upon along with indicative costing.

(g) Experience in building/ supply of ships which meets the requirement as listed in this RFI, along with details of customer/ clients and cost of NHS with delivery date will have to be submitted.

(h) Whether the shipyard would be able to comply with all provisions of DAP 20 or not. If not, which Para/ Clause of DAP 20 would not be agreed to, with reasons, needs to be submitted.

(j) Budgetary quote of the NHS with detailed break up of cost is to be submitted. This should inter alia include design cost, material and equipment cost, labor cost, training cost, product support cost, cost of spares & allowances and taxes (as applicable). All entities factored in the costing are to be indicated in the break up.

(k) Price Variation Clause (PVC) will be applicable in this case i.a.w **Annexure VIII to Appendix M** of DAP-20.

(l) The NHS will be operated by Manpower/ Crew as mentioned in **Appendix A**. The maintenance of the NHS post guarantee period will be carried out by Naval Dockyards/ Naval Repair Yards. Training to *IN* personnel on operation and maintenance is to be imparted by the shipyard/ OEM of equipment at Shipyards/ OEM premises and (or) *IN* premises. Shipyard to indicate acceptance for the same.

(m) Shipyard has to confirm its acceptance with the terms of payment as per DAP 20 and amendment thereof.

(n) Willingness for Option Clause including the duration for which the Option Clause would be valid is to be indicated.

(p) Willingness to participate in the bid for procurement of one National Hospital Ship (NHS) is to be indicated.

(q) The tentative delivery schedule/ build period for supply of the NHS after conclusion of contract including the build strategy is to be indicated.

(r) Shipyard is to indicate the compliance and/ or conformity to various industrial and military standards related to operations and safety such as ISI, CE, MIL spec, etc., for various components/ sub-components of the NHS.

(s) Shipyards to provide inputs on maintenance philosophy (ESP, AMC, PBL, etc), In this regard, Para 51 and **Appendix F** of **Chapter II of DAP 20** is relevant.

(t) Shipyard is to cater for preservation and stowage of equipment during construction phase on order to ensure their functionality at the time of installation.

(u) Shipyard to cater for warranty/ guarantee support for the ship along with all equipment/ systems installed onboard for at least 12 months post-delivery. Shipyard is to obtain the warranty/ guarantee support for all BNE too. Guarantee support is to be extended at the base port of the vessel.

6. The Shipyard should confirm that following conditions are acceptable: -

(a) The solicitation of offers will be as per 'Single Stage - Two Bid System'. It would imply that a 'Request for Proposal' would be issued soliciting the technical and commercial offers together, but in two separate sealed

envelopes. The validity of commercial offers would be at least 18 months from the date of submitting of offers.

(b) The technical offers would be evaluated by a Technical Evaluation Committee (TEC) to check its compliance with RFP.

(c) Amongst the Vendors cleared by TEC, a Contract Negotiations Committee (CNC) would decide the lowest cost bidder (L1) and conclude the appropriate contract.

(d) Vendor would be bound to provide product support for time period specified in the RFP, which includes spares and maintenance tools/ jigs/ fixtures for field and component level repairs. Documentation for training/ maintenance/ repairs are also to be provided.

(e) The vendor would be required to accept the general conditions of contract given in the **Standard Contract Document** at **Chapter VI of DAP 2020.**

(f) **Earnest Money Deposit (EMD)**. EMD would be applicable as per **MoD ID No. 5(02)/2022/ DAC Sectt. dated 06 Apr 22**.

(g) **Performance-cum-Warranty Bond**. Post award of contract security against Pre Contract Integrity Pact (PCIP) will be covered by Performance Cum Warranty Bank Guarantee (PWBG) iaw **MoD ID No. 5(02)/2022/ DAC Sectt. dated 06 Apr 22**.

(h) **Indigenous Content (IC)**. The procurement of the NHS will be as per DAP 2020 and accordingly shipyards are required to submit the details regarding Indigenous Content(IC). The categorization for the procurement is intended to be under Buy (Indian- IDDM)/ Buy (Indian). The NHS must meet the minimum IC parameters i.a.w **Para 21** of **Chapter I of DAP 20**. The Shipyards to also comment on the categorization and IC content as per **DAP 20**.

PART- II

7. **Procedure for Response**

(a) Vendors must fill the form of response as given in **Annexure II to Appendix A to Chapter II of DAP 20 (as per format at Appendix C)**. Apart from filling details about Shipyard, details about the exact vessel/NHS

meeting the generic technical specifications should also be carefully filled. Additional literature on the vessel/NHS can also be attached with the form.

(b) The shipyard to submit separate enclosure clearly indicating compliance with the Operational/ Technical Specifications placed at **Appendix A** of this RFI. Non- Compliance to any of the parameters listed in the **Appendix A**, has to be clearly indicated along with reasons.

(c) Compliance/ acceptance to parameters mentioned at Para 4, 5 and 6 above are to be clearly indicated and certified in the RFI response. **Appendix C, Appendix D and Appendix E** should also be carefully filled and attached with the form. Any other relevant additional literature or document on the NHS can also be attached with the form.

(d) The filled form should be dispatched at under mentioned address:-

The Director General Naval Design(SSG),
Directorate of Naval Design (SSG)
A-33, Kailash Colony
New Delhi- 110048
Tele: 011-29240767
Fax: 011-29231325
E-mail: mail.dndssg@navy.gov.in

(e) Last date of acceptance of filled form is **15 Jul 22**. The Shipyards short listed for issue of RFP would be intimated. Shipyards, if required, can communicate to the project officer of DND(SSG) with below mentioned contact details for seeking clarification/ information on the documents {like Navy Order (NO), Naval Construction Document (NCD)} mentioned in this RFI:-

Cdr (Naval Design)-FDG,
Directorate of Naval Design (SSG)
A-33, Kailash Colony
New Delhi- 110048
Tele: 011-29240767, Mobile : 8800750667
Fax: 011-29231325
E-mail: mail.dndssg@navy.gov.in

(f) The Government of India invites responses to this request only from registered Indian Shipyards who qualify the criteria as enumerated below:-

(i) Financial status should meet the specifications as mentioned at **Appendix C** to **Chapter II** of **DAP 20**.

(ii) Possess infrastructure and capacity (considering the existing and future work load) for undertaking the construction of the Vessels.

8. 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**.

PART- III

Guidelines for Framing Criteria for Shipbuilding Cases

9. The guidelines prescribed for short-listing/ pre-qualification of Indian vendors in case of shipbuilding cases are detailed in **Chapter XII** of **DAP 20** (**Appendix C** to **Chapter XII**). The relevant details are placed at **Appendix 'F'**.

Appendix A
{Refers to Para 5(a)}

OPERATIONAL / TECHNICAL SPECIFICATIONS FOR NATIONAL HOSPITAL SHIP (NHS)

Ser	Capability	Description
1.	**General**	The vessel will comply with the Geneva Convention and accordingly painted white with the Red Cross displayed prominently on the ship side and on top. Including the patients (maximum number 250) and hospital staff of 117, maximum number of persons embarked onboard the ship would be approx. 600. Therefore the Ship is to comply with the requirements of Safe Return to Port (SRtP).
2.	**Role**	The role of the vessel would be to provide Primary and Secondary care to patients onboard the ship.
3.	**Classification**	The vessel would be classed with **one of the *IN* approved Classification Society (viz, IRS/ LR/ DNV-GL/RINA/ ABS/ BV), single or dual class,** with Hospital Ship description for unrestricted ocean voyages. The following design aspects are to meet the requirements of Classification Society, for assigning descriptive notation of 'Hospital Ship':- (a) General arrangement. (b) Ventilation system. (c) Pantry and galley facilities. (d) Sanitary services.

Ser	Capability	Description
		(e) Fire safety. (f) Evacuation routes and lifesaving appliances.
4.	**Area of Operation**	40°N – 40°S
5.	**Compliment and Accommodation**	(a) **Ship's Crew**. 15 officers and 120 sailors (b) **Medical Staff**. 22 officers, 14 MNS and 81 sailors
6.	**LOA**	< 160 m
7.	**Breadth**	As per design
8.	**Draught**	As per design.
9.	**Displacement**	<15000T.
10.	**Propulsion**	Diesel-Electric Propulsion 2 x Diesel-Electric propulsion motor (one per shaft) comprising: (a) Four Main Generators (two per shaft) (b) Two asynchronous, 3 phase, variable speed reversible induction motors. (c) Two reduction gearbox – One per plant. (d) Two fixed pitch propellers.
11.	**Speed**	>18 knots
12.	**Endurance**	4000 nm at designed economical speed of not less than 12 knots. Fuel capacity for 10 days voyage at design speed of 18 knots including 4-5 days in harbour.
13.	**Sea Worthiness.**	Operability upto sea state 6

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td>14.</td><td>Service Life and Op Cycle</td><td>The service life of the ship is to be minimum 20 years. Mandatory dry docking to be done once in 5 years.</td></tr>
<tr><td>15.</td><td>Environmental Conditions</td><td>The ship should be capable of operating under tropical environmental conditions and passage through cold conditions as per NES 1004.
<table>
<tr><th>Ser</th><th>Conditions</th><th>Temperature</th></tr>
<tr><td>(a)</td><td>Ambient Air Temp</td><td>0°C to 35°C with 85% relative humidity</td></tr>
<tr><td>(b)</td><td>Engine Room</td><td>45°C</td></tr>
<tr><td>(c)</td><td>Ambient Sea Water Temp</td><td>Max 35°C</td></tr>
<tr><td>(d)</td><td>Atmospheric Pressure</td><td>760mm Hg</td></tr>
</table></td></tr>
<tr><td>16.</td><td>Security and Safety Surveillance Systems</td><td>Security and surveillance system as per IHQ MoD (N) Policy letter WP/0651/CCTV dated 27 Sep 12 and amendment to the Policy dated 22 Mar 18. Revised NSQRs for marine CCTV system as per IHQ MoD (N) Policy letter WP/0651/CCTV dated 23 Mar 20. In addition, CCTV requirements as per medical specifications.</td></tr>
<tr><td>17.</td><td>Accommodation</td><td>Bunks are to be provided for 110% of ships complement.</td></tr>
<tr><td>18.</td><td>Internal Communication System</td><td>Multi-channel Internal Wireless Communication System running across the ship through all watertight sections with suitable redundancy for antenna and cables against fire/damage is to be catered.</td></tr>
<tr><td>19.</td><td>LAN System</td><td>(a) Admin LAN catering to admin requirements
(b) Medical LAN catering to medical requirements</td></tr>
<tr><td>20.</td><td>First Outfit</td><td>Stores required onboard the ship for carrying out day-to-day running and maintenance,</td></tr>
</table>

Ser	Capability	Description
	Allowance	comprising consumables and permanent nature items for sustaining the ship upto the guarantee period would be supplied by the shipyard at the time of delivery of the ship. First Outfit Allowance List to be supplied would be promulgated by IHQ MoD (N).
21.	**Main Ship Hull Structure**	Hull of the vessel shall be constructed with mild steel approved by IACS member classification society. High tensile steel shall be used in way of areas of high loads or stress concentrations such as helicopter landing area, crane pedestal and structure supporting the crane.
22.	**Scantling and Structural Requirements**	Hull of the vessel should be of welded steel structure designed and constructed in accordance with the requirements of the Classification Society and the Builder's practices. All structural drawings approved by classification society, as part of classification process, should be submitted by shipyard to *IN*.
23.	**Hull Form**	The ship is envisaged to be of mono hull construction based on proven hull form or supported by adequate model testing for resistance, propulsion, maneuvering sea keeping as well as CFD aerodynamic studies/ wind tunnel test.
24.	**Fire & Deck Wash System**	The arrangement of main fire pumps, piping, hydrants and hose reels shall be in accordance with the rules of the Classification Society.
25.	**Scuppers & Drainage System**	Scuppers shall be arranged on all-weather decks and the funnel top. The Scuppers on the exterior decks to be located on both sides of the vessel fore and aft. Exterior scuppers should be drained to sea by gravity according to load-line regulations. In addition, gravity type deck drains are to be provisioned on upper decks to prevent water accumulation.
26.	**Domestic Fresh Water System**	The freshwater capacity of the vessel shall be about 1400 tons.
27.	**Ballast System**.	The vessel is to be designed to minimize the effect of asymmetric flooding by the provision of

Ser	Capability	Description
		U-type tanks and cross flooding pipes, thus reducing list, due to asymmetric flooding. The ship shall be provided with onboard computer capable of performing intact and damage stability analysis to evaluate the trim and list during damage. The ballast capacity of the vessel shall be about 1500 tons. Ballast/Bilge pumps (two or more) of capacity of 150m^3/Hr or more at 3 bar pressure shall be provisioned.
28.	**HVAC System**	HVAC system installed shall be centralized air conditioning with high velocity single duct provision. ISO 7547 shall be followed for HVAC design shall be and comply with class requirements.
29.	**Air Handling Unit**	The HVAC system shall consist of Air Handling Unit (AHU) with distribution duct. Corridor space shall be ventilated through bleed air from compartments. Staircases shall have independent ventilation as required by rules/regulations. Air from hospital, catering space, mess spaces, dry provision store and sanitary space shall not be re-circulated. The AHU should be able to achieve cooling effect as follows:- **Outside air** **Inside air** (a) Temperature (in °C) (dry bulb) + 35 + 27 (b) Relative humidity % 85 50
30.	**Air Changing Ratio per Hour of Air Conditioning System**	Air conditioning system shall be designed according to the class requirements and cater for air change per hour as follows. (a) Cabins/living spaces of crew and passengers 08 (b) Ward Rooms 10 (c) Patients Mess-cum-recreation room 12 (d) Wheelhouse and chart space 08 (e) Galley 06 (spot cooling)

Ser	Capability	Description
		(f) Offices 08 (g) Hospitals 12 (h) ICU 14 (j) OT 20
31.	**Paint Scheme and Deck Covering**	(a) **<u>Paint Scheme</u>** The ship shall be applied with the paint scheme with a guarantee of 5 years in underwater areas including ballast and fresh water tanks. The colour of top coat in above water areas will be specified by *IN*. (b) **<u>Deck Covering</u>** Deck compound for levelling decks shall be light weight. Deck covering in galley, pantry, toilets, laundry etc. shall be sloped down with underlay towards deck scuppers to facilitate proper drainage. Wet rooms such as pantries, public toilets, cabin wet modules, laundries, galley, cleaning lockers etc. shall have wall lining that extends below the coaming of floor and sloped floor. All equipment in galley and pantry areas shall be provided with stainless steel foundations. Underlay shall be laid in all rooms and alleyways in the accommodation, which have covering of carpet, vinyl, wood or tiles.
32.	**Hull Protection**	(a) **<u>ICCP System</u>**. An automatically controlled Impressed Current Cathodic Protection System (ICCP) with remote monitoring system shall be provided for complete hull exterior including rudder and propeller with a mean current density of 35 mA/m^2 (500mA/m^2 for propellers). Shaft grounding device for propeller shaft and earthing cable for rudder stock bounding shall be provided. (b) **<u>Sacrificial Anode</u>**. Sacrificial Aluminium/Zinc anodes shall be fitted on underwater hull and sea chest inside, rudder, bow thruster tunnel etc. Details of all sacrificial anodes used along with chemical composition will have to be provided by the shipyard along with anode plan of the ship.

Ser	Capability	Description
		(c) **<u>Marine Growth Prevention System</u>**. Marine Growth Prevention System (MGPS) anodes shall be fitted inside sea chests.
33.	**Sewage Treatment Plant/ Vacuum Toilet System/ Fixed H2S Gas Detection and Alarm System**.	The ship shall be provisioned with sufficient number and capacity of IMO/MARPOL compliant Biological type (Res. MEPC.227(64)) Sewage Treatment Plants. All sewage plants and tank compartments should be installed with H_2S sensors with indication panel located outside compartment and DCHQ. Fresh water connection shall be provided for cleaning. The STP compartments should have a dedicated ventilation system.
34.	**WT Doors**	(a) Sliding power operated watertight doors with clear opening sizes options of 1400x700, 1800x700, 1600x700, and 2000x1200. (b) Power operated sliding doors in watertight bulkheads to be as per SOLAS CH.II-1, PART B-2, REG.13.
35.	**WT Hatches**	WT hatch covers are to be provided for Red risk zone compartments.
36.	**Accommodation Ladder**	Two telescopic type accommodation ladder, on port and starboard side, Width – not less than 750 mm, length (as per design), construction, installation, maintenance and inspection/survey of accommodation ladder as per MSC-Circular 1331 shall be provided. Material (Al alloy) & capacity shall be in accordance with MSC-Circular 1331(ISO 5488 & 7364). The accommodation ladders shall cater for patient embarkation/ dis-embarkation to ambulance boats.
37.	**Boats, Davits and Life Saving Appliances**	The ship shall be provided with the following lifesaving capacity:- (a) Totally enclosed type, davit launched, lifeboats of total capacity not less than 600. Davit for each lifeboat shall be gravity type and operated by an electric winch.

Ser	Capability	Description
		(b) Rescue boats each of 6 person capacity with total available capacity not less than 12. (c) Life-raft with HRU catering for 140% of ships strength (ship's crew and patients) (d) Davit launched ambulance boats each with a capacity of 6 lying patients, with total available capacity not less than 12. (e) Lifebuoys and lifejackets in accordance with class specifications.
38.	**WT & GT Integrity**	Subdivision and damage stability calculations shall be as per SOLAS. Bulkhead and deck penetrations shall be executed as per yard standards.
39.	**Anchor Chain Cable Arrangements**	**To be as per Class Rules** (a) Stockless bower type anchor. (b) Anchor Chain. (c) Electric motor driven Anchor windlass combined with mooring winch non-auto tension type. (d) Chain stopper (2Nos).
40.	**Towing, Mooring and Berthing arrangements**.	**To be as per Class Rules** (a) Electric motor driven mooring winch, split type drum, non-auto tension type, (b) Mooring rope (c) Towing and mooring arrangements in Fwd / Aft region of the ship shall be as tabulated below:-

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td></td><td></td><td>(i) <u>Fwd Area</u>
<table>
<tr><th>Item</th><th>Qty</th><th>Purpose</th></tr>
<tr><td>Windlass combined with mooring winch</td><td>2 or more</td><td>Mooring</td></tr>
<tr><td>Chock Bulwark Mounted</td><td>8 or more</td><td>Mooring</td></tr>
<tr><td>Chock Bulwark Mounted</td><td>1 or more</td><td>Mooring / Towing</td></tr>
<tr><td>Roller, Nominal Dia300</td><td>6 or more</td><td>Mooring</td></tr>
<tr><td>Bollard, Nominal</td><td>6 or more</td><td>Mooring</td></tr>
<tr><td>Bollard, Nominal</td><td>1 or more</td><td>Mooring / Towing</td></tr>
</table>
(ii) <u>Aft Area</u>
<table>
<tr><th>Item</th><th>Qty</th><th>Purpose</th></tr>
<tr><td>Mooring winch</td><td>2 or more</td><td>Mooring</td></tr>
<tr><td>Chock Bulwark Mounted</td><td>8 or more</td><td>Mooring</td></tr>
<tr><td>Chock Bulwark Mounted</td><td>1 or more</td><td>Mooring / Towing</td></tr>
<tr><td>Bollard, Nominal</td><td>2 or more</td><td>Mooring</td></tr>
<tr><td>Bollard, Nominal</td><td>2 or more</td><td>Mooring / Towing</td></tr>
</table></td></tr>
<tr><td>41.</td><td>Stability.</td><td>Trim & stability in compliance with the requirements of 2008 IS Code & Damage Stability will comply with the requirements of SOLAS 2009 Chapter II-1 (Probabilistic Damage Stability). Shipyard shall submit preliminary trim and stability conditions for various agreed loading conditions to Owner at the earliest possible date, showing loaded and ballast conditions.</td></tr>
<tr><td>42.</td><td>Insulation</td><td>Mineral wool insulation shall be provided for accommodation against extreme high and low temperatures, fire and noise. The insulation shall be fitted with a vapour barrier in way of</td></tr>
</table>

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td></td><td></td><td>exposed surfaces and in accordance with Maker’s instructions. As a guidance for thermal insulation the U-values of external bulkheads and decks shall comply with the following:-

(a) Exposed deck 0.4W/m 2 /C
(b) Outside bulkhead 0.5W/m 2 /C</td></tr>
<tr><td>43.</td><td>Partition walls</td><td>Fire rating of all walls, lining and ceiling shall be as per SOLAS. Internal partition walls would be of modular elements (thickness = 50mm) with mineral wool core and covered with 0.7 mm galvanised steel plate on each side. Panels in laundry, galleys, toilet/shower units, and other areas where wet conditions prevail, shall be approved for wet rooms.</td></tr>
<tr><td>44.</td><td>Lining</td><td>Internal partition walls shall be of 25mm thick sandwich elements with 0.7mm galvanised steel sheets and PVC foil on one or two sides. The panels shall be mounted in a galvanised steel-profile system. Lining in galley, pantry and laundry of modular elements shall be 25 mm thick with 0.5 mm surface of stainless steel.</td></tr>
<tr><td>45.</td><td>Noise and Vibration</td><td>Noise levels in accommodation and working spaces would be in accordance with the IMO Resolution MSC 337(91) - "Code on Noise Levels on Board Ships". Vibration levels in the accommodation cabins should be complied to 5 mm/s requirement.</td></tr>
<tr><td>46.</td><td>Propulsion System</td><td>The propulsion system shall be a diesel-electric system powering two propulsion units with their propulsion motors. The propulsion system shall be configured for control from the Wheelhouse and the Engine Control Room (ECR).</td></tr>
<tr><td>47.</td><td>Propulsion Motors</td><td><table>
<tr><td>No. of sets</td><td>2 (one for each propulsion unit)</td></tr>
<tr><td>Type</td><td>Variable speed reversible induction motor, asynchronous</td></tr>
<tr><td>Voltage</td><td>About 3kV (according to frequency drive</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>equipment)</td></tr>
<tr><td>Phase</td><td>3</td></tr>
<tr><td>Mounting</td><td>B3 (horizontal)</td></tr>
<tr><td>Enclosure</td><td>IP 44</td></tr>
<tr><td>Cooling</td><td>Freshwater</td></tr>
<tr><td>Insulation class</td><td>F</td></tr>
<tr><td>Ambient Air Temp</td><td>35 ° C</td></tr>
<tr><td>Maximum machinery spaces temp</td><td>45 ° C</td></tr>
<tr><td>Seawater temp</td><td>32 ° C</td></tr>
<tr><td>Ambient air pressure</td><td>1000 mbar</td></tr>
<tr><td>Relative humidity</td><td>95 %</td></tr>
</table>
</td></tr>
<tr><td>48.</td><td>Prime movers for Generators</td><td>Engines for driving the generators shall be a non-reversible, four-stroke, inline, turbocharged marine diesel engine with forced lubrication and direct fuel injection, of capacity and output as per shipyard design shall be provided. The engines shall have low NOx emission to meet requirements, as specified in the IMO, Tier II emission standards.</td></tr>
<tr><td>49.</td><td>Propulsion train</td><td>Design of the propulsion train shall have no barred speed range within the normal operating speed range of the propellers. Each shaft shall be designed based on 100% MCR of one electric propulsion motor at nominal running speed.</td></tr>
<tr><td>50.</td><td>Propellers Operations</td><td>The vessel shall be provided with two conventional fixed pitch type propellers, each with four blades of nickel-aluminium bronze and a diameter of approx. 4.0m.</td></tr>
<tr><td>51.</td><td>Thrust Block</td><td>Each gearbox shall be provided with a built-in thrust bearing.</td></tr>
</table>

Ser	Capability	Description
52.	**Auxiliary systems**	Auxiliary systems like Fire main, Machinery sprinkling, Salvage systems, Domestic Fresh Water systems, Chilled Water system, Domestic Sea Water system, Machinery Sea Water Cooling system, Fuel system, Lub Oil System, AVCAT system, Bilge Pumping Out System, Ballast and De-ballast system and Fixed major firefighting system in machinery compartments to be provided.
53.	**Auxiliary Boiler**	Automatic, vertical, forced draft, auxiliary boilers providing 7 bar saturated steam of total installed capacity of about 3200 kg/hr shall be provided. Fuel oil for these boilers shall be HFHSD /HFO/MDO/MGO (max 0.5 % sulphur).
54.	**Economizer**	Economizer shall be installed onboard as a vertical, cylindrical, smoke tube type without steam drum operating at 7 bar saturated steam
55.	**Liquid Treatment Unit**	(a) Fuel Oil Separator (b) Diesel Oil Separator (c) Lub Oil Separator (d) Bilge Water Separator
56.	**Fixed Fire-fighting System**.	The following fixed fire-fighting system shall be provided:- (a) **CO_2 Total Flooding**. One set of Fixed Gas Fire Extinguishing System (CO_2 System) shall be provisioned for Hold area, AVCAT compartment and Machinery Spaces. (b) **Water Mist Fire Extinguishing System**. Local protection water mist type fire extinguishing covering machinery spaces and machinery equipment such as generators, purifiers, boilers and incinerator as per rule and regulations.

Ser	Capability	Description
		(c) **<u>Portable and other extinguishers</u>**. Portable and other extinguishers shall be provided according to class rules. (d) **<u>Fire Main System and Fire Hydrants</u>**. Fire & Deck-Wash Pump with a capacity of about 100 m^3/h @ 1 MPa each shall be provided. These shall be electric motor driven, centrifugal type with self-priming unit. Fire hydrants shall also be provisioned on helo deck and hangar. The fire main system should be able to sustain 8 bar or more pressure across the ship and the helo deck.
57.	**Steering Gear**	An electro hydraulic, completely independent, rotary vane type steering gear shall be provided. The steering gear should be capable of turning the rudder over from 35° in one side to 30° in the other side within 28 seconds, with the vessel running ahead at full loading condition with the rated power of the propulsion motor
58.	**AC Plant**	AC plants with R134A cooling medium shall be provisioned. The installed AC plant capacity should cater for the ship's calculated heat load and over capacity iaw class rules but should not be less than 4800KW.
59.	**Ref Plant**	Ref plants of automatically controlled direct expansion and air circulating system with R134A as cooling medium shall be provided. The installed ref plant capacity should be 75KW or more.
60.	**RO Plant**	RO plants installed capacity should not be less than 200T/day.
61.	**AVCAT System**	The AVCAT fuelling system with storage tanks for not less than 30T to be provided to supply a helicopter with aviation fuel on the flight deck through suitable filtering arrangements and to defuel a helicopter. The pumps associated with the system should be vapour and shock proof

Ser	Capability	Description
		and capable for local and remote starting from the Helo Deck. The AVCAT system design should comply with requirements specified in CAP 437 (Standards for Offshore Helicopter Landing Areas).
62.	**Power Generating Machinery**	Electric power for both propulsion and hotel load shall be from diesel generators, placed in two separate engine rooms. One dedicated harbour diesel generator is to be provided in addition to cater for harbour load.
63.	**Other Auxiliary System**	Heating System, Sludge and waste oil system, Incinerator
64.	**Helicopter**	The ship should be capable of conducting embarked operations with hangarage of 01 (One) Advanced Light Helicopter (ALH Mk I/III)/ Naval Utility Helicopter (NUH).
65.	**Helo Deck**	(a) **Length**. Minimum Helo deck length required for operation would be 22.3 m. (b) **Width**. Minimum Helo deck width required would be 9 m. (c) **Strength**. Helo deck should be capable to support operations of min 5.8 Tonnes helicopter. (d) **Harpoon Grid (Helo Deck Grid)**. The Harpoon Grid is a system aimed at securing a helicopter to the Helo Deck immediately after touchdown by the hydraulic engagement and lock of the helicopter harpoon onto a grid set in the Helo Deck. (e) Fuel spill considerations, obstructions, safety net and helicopter tie down arrangements to be borne in mind while helo deck design.

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td>66.</td><td>Helo Hangar</td><td>(a) <u>Type of Hangar</u>. Fixed or retractable type hangar shall be provided.

(b) <u>Hangar Internal Dimensions</u>

<table>
<tr><th>Ser</th><th>Parameter</th><th>Dimensions</th></tr>
<tr><td>(i)</td><td>Unencumbered Maintenance envelope in side Hangar - Length</td><td>18 m</td></tr>
<tr><td>(ii)</td><td>Unencumbered Maintenance envelope in side Hangar - Width</td><td>6.5 m</td></tr>
<tr><td>(iii)</td><td>Unencumbered Maintenance envelope in side Hangar - Height</td><td>6.1 m</td></tr>
</table>

(c) <u>Additional Features</u>. Drainage, Ventilation, Hangar Lighting and Control, CCTV

(d) <u>Hangar Door</u>. Roller type hangar door to be provisioned.

(e) <u>Customised Stowage</u>. Customised stowage shall be provided in the Hangar area for Aircraft Maintenance and Ground Support Equipment (A/GSE). The customised stowage would be a means of attaching an item of A/GSE to the structure of the ship. The attachment means shall be self-contained, require no special tools to either attach or detach, and be operable by one man, in no more than 2 minutes.</td></tr>
<tr><td>67.</td><td>Helicopter Traversing System</td><td>Portable Helo Traversing System (like Rapid Aircraft Mover Multi Aircraft Matrix Acquisition System (RAMMAMAS) utilised on-board Deepak Class of ship) for NHS. The helicopter traversing system will be used to secure and manoeuvre the helicopter from the landing area to the Hangar and vice versa.</td></tr>
</table>

Ser	Capability	Description
68.	**Helicopter Operational Support**	(a) **<u>LSO Compartment</u>**. A compartment is required in or adjacent to the Helo Deck where the Landing Safety Officer (LSO) can be stationed. The ship shall have a LSO compartment located, arranged, outfitted and equipped to facilitate monitoring and control of helicopter operations during all pre-flight, launch and recovery evolutions and during flight operations within visual range of the ship. The LSO compartment configuration, arrangement of consoles and location of equipment shall enable the Landing Safety Officer (LSO) to perform their duties and other functions and maintain an effective lookout over the Helo Deck and sea and sky aft of the Hangar face. (b) **<u>Helicopter Communications</u>** (i) Internal Voice Communication (ii) Helicopter Deck Communication System (iii) External Voice Communications (c) **<u>CCTV</u>**. The Helo Deck CCTV system shall provide full control of the Helo Deck cameras including pan tilt and zoom where applicable. The Helo Deck CCTV system shall include at least one fixed camera and two steerable cameras. (d) **<u>Helicopter Fuelling</u>**. Should be capable of taking fuel at a rate of 85 cubic metres/hr. The system shall have sufficient usable helicopter fuel storage capacity to sustain the selected helicopter for not less than **100 flying hours**. For NHS the calculate storage capacity is **30 T**. Helo Inflight Refueling (HIFR) gear shall be provided for the type of helicopter. (e) **<u>Helicopter Electrical Power Services</u>** (i) Aircraft Starting/ Servicing Power:-

Ser	Capability	Description
		(aa) 115/200 V AC 400 Hz 3 phase 4-wire (ab) 28 V DC, 10KW, ripple not more than 1V. (ii) Ship's Service Power – 380/440 V AC 50 Hz 3 phase. (iii) Secondary Ship's Service Power – 115/200V AC 50 Hz 1 phase. (iv) **28V DC General**. The AC/DC conversion unit, if required by the helicopter, shall be proven suitable for its intended purpose, and feature safety and electrical protection devices in accordance with standard shipboard electrical practice. (f) **Helo Starting Rectifier**. Helo starting rectifier is utilized for starting of aircraft and undertaking maintenance activities on deck and hangar. HSR compatible with ALH MkI/III and NUH to be provided. The SOTRs of the HSR system would be provided by IHQ MoD (N) / DEE. Max rating for HSR of ALH Mk III is 1300 Amps.
69.	**Helicopter Maintenance Support**	(a) **Ground Support Equipment**. The list of Ground Support Equipment to be provided would be provided by IHQ MoD (N). (b) **Aviation Compartments**. The ship is to be provisioned following compartments iaw INBR 1760 for maintenance support to aviation operations:- (i) Aircraft Maintenance Control Organisation (AMCO) (ii) Aircraft Engineering Workshop (iii) Avionics Workshop

Ser	Capability	Description
		(iv) Aviation Store Room (v) Petroleum, Oil and Lubricants (POL) Store
70.	**Flight and Visual Landing Aids**	The ship is to be provisioned following flight and visual landing aids iaw INBR 1760:- (a) Meteorological Facilities (b) Helo Deck Marking (c) Helo Deck Lighting System (d) Stabilised Horizon Reference System (SHRS) (e) Advanced Stabilised Glide Slope Indicator
71.	**Helicopter Deck, Hangar Fire Fighting System and AVCAT Pump Room**	(a) A separate system shall provide AFFF to the Helo Deck from hydrants located in the hangar and aft below Helo Deck. (b) A minimum of 2 hydrants shall be supplied with 3% AFFF at fire main pressure. The ship's AFFF system can be used to supply the hydrants and a sprinkler system in the hangar. (c) AVCAT pump rooms are to be provided with modern fixed firefighting systems such as CO2 / FM200 / High Pressure Water Mist Fire Fighting Systems / high level foam (AFFF) sprinkling systems or a combination of the aforesaid systems with remote operation facility.

Ser	Capability	Description
72.	**General Electrical Requirements**	The electric power production and distribution systems shall be designed in order to ensure economical, safe and easy operation under normal conditions. Following types of power supplies are to be used: - (a) 6600V, 60 Hz, 3-Phase (b) 440V, 60 Hz, 3-Phase (c) 230V, 60 Hz, 1 Phase (d) 24V DC (e) Any other converted supply catering for applications like aviation etc.
73.	**Alternators**	The Vessel should be provided with suitable number of Diesel Generators confirming to classification society, to cater for maximum electrical load including medical load envisaged at any operating regimes of the vessel. Generators should be suitable for unattended parallel operation. Automatic Power Management System is to be provisioned for automated power generation, control, monitoring and power distribution. Further, adequate numbers of harbour DAs are to be provided to cater for ship's hotel load as well as complete medical load in harbour.
74.	**Emergency DAs**	In addition to the main generators, one stand-alone air cooled emergency DA of adequate capacity should be provided as per requirements of SOLAS convention. The emergency DA should also cater for medical load in case of electrical emergencies.

Ser	Capability	Description
75.	**APMS**	The Vessel's power management shall be achieved through Automated Power Management System. The APMS should comply with class rules and is to achieve a high level of availability, reliability with ease of maintenance and servicing. The AMPS and Switchboards should be procured through the same OEM in order to undertake interfacing/ networking between them to ensure reliable power supply system.
76.	**Power Distribution System**	The power distribution system is to be catered in accordance with class rules and controlled through APMS. In general normal supply is to be arranged from the power sources nearest to the load and alternate supply from the sources farthest from the load. Distribution panel is to be fed from 415/230/24 volts, 3 phase transformers or transformer rectifier cum battery charger for lighting and other small power consumers. All circuits will be protected by MCBs. All domestic supplies would be of four wire system.
77.	**Switchboards**	(a) Two main switchboards (MV) with bus-bar coupler between each generator section, switch gear and distribution boards conforming to class rules are to be provided. The main MV (6.6kV) switchboard shall be of the split type with bus-tie breakers dividing the bus-bars into two symmetric parts. (b) Low voltage Main Switchboard shall be provided using draw out type Air Circuit Breakers or Moulded Case Circuit Breakers for the protection of generator circuits and moulded case circuit breaker (plug in type) for protection of feeder circuits.
78.	**Emergency Switchboard**.	The emergency switchboard shall be installed to cater for the emergency DAs and is to be installed in the emergency DA room. It shall be of similar construction as that of low voltage main switchboard complying with class rules and statutory regulations.

Ser	Capability	Description
79.	**Transformers**.	All transformer and rectifier should conform to class rules and relevant marine standards. The ship builder will provide sufficient number of suitable capacity transformers, both MV and LV, to cater for power supply distribution from all sources for consumption of medical, domestic, galley, lighting, wireless equipment and navigational loads.
80.	**Change Over Switch**.	Normal and alternate source of supply for important services is to be arranged through change over switches.
81.	**Batteries and Chargers**.	Maintenance free batteries for the 24 V DC systems are to be provided according to the relevant class rules. Transformer rectifiers cum battery charger of adequate capacity shall be fitted to boost/ trickle charge the battery. The 24 V DC supply is to meet the requirement of the emergency lighting, navigation light and communication.
82.	**Uninterrupted Power Supply**.	Critical equipment of the integrated alarm and monitoring and control system like RTUs, network switches, Workstations etc. shall be powered through UPS for all critical equipment including critical medical equipment. The UPS shall provide a backup according to class rules and shall be of at least 30minutes/as applicable by class rules and regulations in case of main power failure. The Batteries shall be maintenance free type as per class rules.
83.	**Lighting**	The installation of lighting equipment shall be as per class rules and it is recommended that LED based lighting be installed. Navigational and signal lights are to be installed as per class rules. In all spaces, lighting will be grouped so that in the event of any supply failing, a portion of lighting will still be available.
84.	**EMI/EMC**	EMI/EMC standardized procedures are to comply with NECP 500 and MIL STD 461 E/F.

Ser	Capability	Description
85.	**Internal Communication**.	The following internal communication equipment is to be provided as per Classification Society Rules: - (a) Ship's Main Broadcast (MB/ SRE) System for broadcasting general announcements, safety procedure, raising alarms etc. (b) Auto Telephone system for every day communication through a Telephone Exchange. (c) Intercom system with hardwired analog point-to-point and point-to-multi point, cordless communication for specific operation oriented communications. The intercom system is to be provided (but may not be restricted to) for the following groups: - (i) Conning Intercom (ii) Machinery Intercom (iii) Switchboard/ Electrical Intercom (iv) Damage Control Intercom (v) Upper Deck intercom (vi) Aviation Facilities Intercom (vii) Action Information Intercom (d) Additionally, a Sound Power Telephone system is to be provided as an emergency communication system in case of total power failure.
86.	**ACCS**	The ship should have an Advanced Composite Communication Suite (ACCS)/ latest ver integrating all communication equipment to the communication data bus. The ACCS should be fully compatible with the data link equipment.

Ser	Capability	Description
87.	**Ship's Communication System**	The ship's communication fit should include the following equipment:- (a) **<u>Fixed Radio Sets (with RCU)</u>**. (i) SDR (NC) - 01 (ii) SDR (TAC) - 02 (iii) 04 x HD VLF-HF Receivers / 04 x All Wave Receivers with 02 each HSDMs, GMSK demodulators and AVLF Demodulators. (iv) 01 x 1 KW HF Tx/Rx with RCU (ATRX 1000) (b) **<u>Visual Signalling Equipment</u>**. (i) 02 x 15" signalling projectors. (ii) 02 X Flag Sets (including cable flags) and Flag lockers (with provision for vertical storage of flags). (iii) 02 x Aldis Lamps. (iv) 02 x Handheld Signalling Torches. (c) **<u>Associated Systems</u>**. (i) 01 x Digital Multimedia Recorder for online recording of communication including MMB.

Ser	Capability	Description
		(ii) 02 x Emergency UHF and VHF aerials. (iii) 02 x Wire aerials. (d) **Portables**. (i) 02 x HF Manpack (PRC 6020A - latest version) sets with data modem, associated battery chargers and one spare battery for each set. One PC to be provided for data applications. (ii) 40 x handheld VHF Tx/Rx with VOX (for hands-free usage), MOTO TRBO XIRP8668i or equivalent/ later version compatible with *IN* VHF Tx/Rx sets, waterproof bag, associated battery charger and one spare battery each. (iii) 04 x SDR MP/ V/UHF Manpack and 10 SDR (HH) sets along with associated battery charger and one spare battery for each set. (e) **GMDSS Equipment**. (i) 02 x VHF MMB Tx/Rx with DSC (with battery backup/ UPS) complying with latest IMO regulations. (ii) 02 x SARTs. (iii) 01 x INMARSAT 'C' terminal with EGC and printer (with battery backup/ UPS) and provision to disable GPS input.

Ser	Capability	Description
		(iv) 02 x EPIRBs (406 MHz). (v) 01 x NAVTEX Receiver. (f) **Cryptographic Equipment**. Cryptographic equipment is to be provided as per list promulgated by IHQ MoD (N) separately. The equipment will form part of D-787 of the ship and is to be procured from vendors promulgated by IHQ MoD (N). (g) **Data Link Equipment**. Link-II Mod III (Small Ship Configuration, with IMSAS) or its latest upgrade. The recommended operator console configuration is as follows:- (i) Messaging Consoles - 02 (Bridge, MCO) (ii) Tactical Consoles - 01 (Bridge/ Ops Room) (iii) Mobile Terminals (MMC) - 02 (Bridge, MCO) (h) **SDN Interfaces**. Following interfaces may be included in SDN Network :- (i) GPS (ii) Link II (iii) MSS (iv) AIS (v) Rukmani interface (vi) HF Tx/ RX, V/UHF Tx/Rx interface (j) **NCO Interfaces**. In order to ensure seamless transfer of ship's position following interfaces to be provided for Link II :-

Ser	Capability	Description
		(i) Link II - MSS (ii) Link II - Rukmani (iii) Link II - RF (k) **Satcom Equipment**. The following Satcom equipment are considered critical for effective communication: - (i) FBB 500 - 02 (ii) Rukmani LSST Terminal (C & Ku) - 01 (iii) Rukmani encryptor Scorpio Mk II - 02 (iv) MSS TX/RX MK II - 01 (v) MSS Secrecy Device (Gautam) – 02 (vi) BGAN Terminal (Portable Terminals)- 02 (l) **Office Equipment**. (i) Suitable number of PCs to cater for complement of Offices/ departments/ officers onboard. (ii) 02 x Office computer with laser printer and UPS. (iii) 01 x Desk Top Optical Scanner with OCR. (iv) 01 x Photocopier. (v) 01 x Heavy Duty Shredding Machine.

Ser	Capability	Description
		(vi) 01 x Fax Machine. (vii) 01 x Cross Cut Shredding Machine. (viii) Suitable battery backup/UPS to be provided for the following:- (aa) Sanchar PC. (ab) MMB V/UHF Tx/Rx set. (ac) Inmarsat 'C' Terminal. (ad) PCs for office. (m) **Emergency Power Supply**. One Emergency Generator iaw latest guidelines must be fitted onboard to provide sufficient power to operate the following communication equipment, in case the primary PGD system of the ship is not available:- (i) 02 x Software Defined Radios with RCU (01 each) for SDR (NC) and SDR (TAC). (ii) 02 x HD VLF Rx. (iii) 01 x Receiver Aerial Exchange. (iv) 01 x On/Off Line Crypto System (ECL Beacon MK III). (v) 02 x Signal Projectors. (vi) 02 x Remote Operating Positions (one each in Bridge and MCO). (vii) Lighting in MCO.
88.	**Ship's Navigation**	Following Navigation equipment shall be provisioned:- (a) **Gyro**. Two Gyro Compass with seven repeater units. (b) **Log**. Doppler speed log (Dual Axis type). (c) **Echo sounder**. Echo sounder with printer & recorder with 2 transducers (Fwd/Aft) with

Ser	Capability	Description
		digital display/shallow depth alarm feature. (d) **DGPS**. Two sets of 12 channels DGPS navigator with plotter alarm. (e) **AIS**. Two AIS units with separate transponder units (f) **Magnetic Compass with Repeater**. One Magnetic Compass with repeaters in Wheel house and Emergency (Aft) Steering Post. (g) **ECDIS**. Two completely separate ECDIS systems (One working and one for standby operations) with track control function. (h) **Autopilot**. One Autopilot with follow-up and non-follow-up mode selection. (j) **Nav Radar**. Two X band radars and one S band radar. The radar displays shall be interfaced with both AIS. (k) **Anemometer**. One wind speed and direction indicating system with two repeaters. (l) **Bridge Navigation Watch Alarm System**. One unit with Reset button and Buzzer unit is to be provided iaw class rules. (m) **Course Recorder**. One ourse recorder shall be provided. (n) **Navigation and Signal Lights**. The type and arrangement of navigation & signal lights are according to the latest national and international standards and COLREGS.

Ser	Capability	Description
89.	**Integrated Bridge System (IBS)**.	An integrated bridge navigation system is to be provisioned. The system shall meet IMO and Class requirements.
90.	**General Medical Requirements**	General Medical requirements are as follows: - (a) The hospital ship should be 250-bedded hospital fully equipped with Operation Theatres, ICU, wards, radiology, laboratory and other hospital facilities. (b) The ship should be designed for efficient patient movement to and from casualty receiving areas and between wards. (c) The ship should be provided with gender-neutral habitability spaces in order to accommodate women as part of hospital staff. (d) The ship's ventilation should cater to carriage of infectious patients and prevent cross infection with personnel on board. The ship should be designed in a manner to totally isolate the medical facilities from the remaining part of ship. (e) Dedicated HVAC should be provided in OT, Isolation Wards and Burns Ward. Adequate number of water, electrical and medical gas points should be provided in all areas. (f) The ship should possess Telemedicine facility with requisite equipment. (g) Galley and facilities for dining should be separate for patients and staff. (h) The ship should have its own onboard Oxygen Generating System with piped medical gas and vacuum (PMGV) facility. The Oxygen Generation Plant (OGP) should be based on Pressure Swing Adsorption (PSA) technique and Molecular Sieve (Zeolite) technique with a capacity of 400 l/min.

Ser	Capability	Description
		(j) The ship would be required to dispose of its Bio-medical Waste, including infective waste, and facilities for the same should exist onboard. (k) The ship should possess two ambulance boats each capable of embarking/ disembarking and carrying six lying casualties. Each boat should have two Patient Transfer Units (PTUs) and auto-loader stretcher facility. (j) Lifts, alleyway and spaces should have space to cater to transportation of patients by stretchers. As far as possible, patient movement should be mechanical in nature. It is recommended that ramps are available for movement of stretcher trolleys between decks, as an alternative to lifts. In case of non-feasibility for provisioning of ramps the following measures are recommended to be incorporated:- (i) Feasibility of provision of three to four patient lifts in separate Main Vertical Zones (MVZ) with accessibility to all decks from top to bottom, needs to be explored. (ii) The lift should have a rated load capacity of at least 2500 Kg with clear car floor area of at least 1800 mm (width) x 2700 mm (deep) and clear door opening width of 1400 (mm). (iii) Ladders should have adequate width (at least 1.2m) to cater for easy transportation of patients by stretchers in case of fire or unforeseen emergencies. (k) Adequate shelves/ cupboards should be provided for storing equipment, medicines and documents in all compartments, with adequate securing arrangements.

Ser	Capability	Description
		(l) The Acceptable noise and vibration levels in hospital spaces will be as per World Health Organisation guidelines i.e. 40 dB LAmax (Transient noise target), during the night and 30 dB LAeq (continuous noise level) during day and evening. For critical areas the noise level should be as low as possible. The vibration levels in the hospital spaces should conform to ISO 2631- 1 & 2. (o) Flooring of hospital ship should be of such material, which can be cleaned and disinfected easily. (p) The accommodation ladders are to cater for patient embarkation/ dis-embarkation to ambulance boats. (r) Dedicated CCTV facility as part of the Ship's CCTV system on SDN, for the medical complex with central monitoring and control from the main medical reception area, is to be provided in the Reception, ICU, HDU, CBRN Ward, Isolation Wards, Dispensary and Medical Store.
91.	**Specific Medical Requirements**	(a) **Bed Capacity**. The ship should have a capability for operating independently as a 250-bedded hospital providing primary and secondary health care. (b) **Reception**. The ship should have two Patient Reception areas to facilitate easy reception and transfer of casualties – primary reception area and secondary reception area close to the helo deck and embarkation deck respectively. They should be able to cater for seating of at least 20 patients at a time as well as have proper decontamination facilities, including bathrooms. (c) **MO's Examination Rooms/ MI Room.** There should be at least 05 MO's Examination Rooms which will be in close proximity with the primary and secondary reception areas. These areas will be used by the MOs for triage and referral of the patients.

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td></td><td></td><td>
(d) <u>Operation Theatre</u>. There should be at least two major OTs and minor OT with a pre-Operative Room and a Post-Operative Room attached to each. Each OT should have attached facilities for Scrub Room, Theatre Sterile supply Unit (TSSU) etc. The OTs will have their own Air handling Units (AHUs).

(e) <u>Patient Accommodation/ Wards</u>. Four types of wards should be catered for, namely Officers ward, Sailors/ PBOR/ Civilians Ward, Family ward and isolation Ward. All wards should have separate WC and bathrooms. The ship should have following different wards and associated areas:-

<table>
<tr><th>Ser</th><th>Name of area</th><th>No of Wards</th><th>No of beds in each ward</th><th>Total No of beds</th></tr>
<tr><td>(i)</td><td>ICU</td><td>1</td><td>12</td><td>12</td></tr>
<tr><td>(ii)</td><td>HDU</td><td>1</td><td>14</td><td>14</td></tr>
<tr><td>(iii)</td><td>Wards</td><td>12</td><td>14</td><td>168</td></tr>
<tr><td>(iv)</td><td>Male Isolation Ward</td><td>2</td><td>12</td><td>24</td></tr>
<tr><td>(v)</td><td>Female Isolation Ward</td><td>2</td><td>12</td><td>24</td></tr>
<tr><td>(vi)</td><td>Burns ward</td><td>1</td><td>08</td><td>08</td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>250</td></tr>
</table>

(f) <u>Labour Room</u>. There should be provision for a labour Room onboard in proximity with the Operation Theatre in order to cater for contingencies during HADR.

(g) <u>Dental Care Facility</u>. A full-fledged Dental Care Facility equivalent to a Type B Dental Centre with 3 Dental Officers with 05 Dental Chairs, portable Dental X Ray Machine and all its
</td></tr>
</table>

Ser	Capability	Description
		peripherals are to be provided. A Dark Room facility is to be provided for the Dental X-ray machine. (h) **Medical Equipment**. The ship is to be provided with modern medical and dental equipment, which are considered necessary for life/ limbs saving measures as part of shipyard scope of supply: The list of medical equipment is placed at **Annexure 1 to Annexure 3 of Appendix A**. (i) **Laboratory**. A state of the art laboratory with pathology, microbiology and biochemistry equipment is to be provided. (j) **Blood Bank**. Adequate facilities for storage and collation of blood are to be provided. (k) **Radiography**. The ship shall have all essential radiography equipment, including CT-Scan, X-ray with C-arm, ultrasonography and adequate number of portable digital X-ray machines. (l) **CSSD**. The Hospital ship needs to be provided with fully equipped Central sterile supplies Department for providing the hospital with required sterile supplies. (m) **Mortuary**. A ten cabinet mortuary is to be provided onboard for fatalities. (n) **Telemedicine Room**. A dedicated telemedicine room is to be provided in the ship. In addition to the telemedicine room, one more additional node each should be provided in the MO's Room, Surgeon's rest room, Casualty, OTs, Officers' & Sailors' Wards.

Ser	Capability	Description
		(o) **Aero-medical evacuation centre/Flight deck emergency room.** It should be located close to the flight deck and should have two stretcher trolleys and all emergency medical equipment. An additional DMO room should be provided for the MO near this room. (p) **Physiotherapy Room**. A separate room should be provided for physiotherapy with necessary equipment. (q) **Central Oxygen Supply and Suction**. The hospital complex is to be provided with central oxygen, nitrous oxide, compressed air at 4 Bar & 7 Bar and suction to all the areas involved in patient care. (r) **Medical Waste Management**. The Bio Medical Waste of the hospital ship would be segregated at source and treated as per the latest BMWM & H Guidelines using necessary equipment such as autoclave, hydroclave, microwave, incinerator etc. This facility is to be located in biomedical waste management room. All equipment for biomedical waste disposal is to be provided as per Navy Order 13/2014. (s) **Decontamination Tank**. One decontamination tank of at least 15T capacity is to be provided. (t) **Contagion Resistance**. For Contagion resistance, the following three aspects have to be implemented: - (i) Decongestion of living spaces to minimise the spread of airborne infections. (ii) Ventilation systems for better contagion resistance.

Ser	Capability	Description
		(iii) Designated isolation facilities onboard *IN* ships (Dedicated ATU with HEPA filters and negative pressure system). (u) **Stretchers.** Stretchers are to be positioned suitably along the main alleyways/ in suitable positions distributed along the ship along with securing arrangements. Each action post should have one Neil Robertson (NR) stretcher. The Airborne stretchers are to be suitable positioned in the vicinity of the Flight Deck. The stretchers on the weather decks should have storage cabinets. Only stretchers approved for use in the Navy should be provided. Total 78 stretchers to be provided. (v) **Dispensary with Attached Medical Store**. A dispensary with adequate racks/ stowage arrangements is to be situated along the corridor. A separate AC compartment with adequate racks and cupboards is to be provided in the rear side of the dispensary for storing medical stores/ drugs (expendable & non-expendable) with provision of Cool Room and Cold Room. The temperature and humidity requirements of Cool Room envisaged for medical store are 8°C to 15° C with RH upto 60% and that for Cold Room are 2° C to 8° C with Relative Humidity upto 60%. (w) **Pantry, Dining Halls and Galley**. One each is to be provided for patients, staff and Officers separately. (x) **Medical Laundry**. The ship is provided with standalone mechanized medical laundry, to clean, wash and iron bed sheets, blanket and patients' clothing. A cupboard should be provided for detergents & chemicals

Ser	Capability	Description
		(y) **<u>Ambulances</u>** (i) Two land based ambulances (One Basic Life Support Ambulance (Type – B) and one Cardiac Care Ambulance (Type-D) with all necessary medical equipment and stretchers) are to be provided for the ship. Facility should be provided for embarking/ disembarking the ambulances from their respective storage space onboard the ship to the jetty by utilizing the ship's cranes. (ii) Air evacuation through embarked helo is to be used for transferring emergency patients to and from other ships/ shore hospitals. (iii) Two Ambulance Boats each capable of embarking/ disembarking and carrying six laying casualties. Davits should be capable of launching and recovering of Ambulance boats with 06 lying patients and crew onboard. (iv) Size, capacity and other Technical Requirements will be as per Joint Services Qualitative Requirements (JSQRs) No. 2310-009 issued by Dte of Standardization and amended from time to time.
92.	**Design and Construction of Hospital Spaces**.	The ship would carry a descriptive notation of a "Hospital Ship". For assignment of this descriptive notation, the design aspects like GA, ventilation arrangements, pantry, galley, laundry, sanitary services, fire safety, evacuation routes and LSA arrangements are required to meet class requirements. For ensuring correct design philosophy for hospital spaces, the shipyard to hire a hospital design consultant as their design partner to evolve draft design of the hospital spaces iaw the class requirements in consultation with team of Subject Matter Experts nominated by IHQ MoD (N)/ DGMS(N). The draft design should be forwarded to IHQ (DND/DGMS) for approval.

Ser	Capability	Description
93.	**Damage Control Philosophy**	The philosophy for damage control are based on the following:- (a) Capable of withstanding a fire within the casualty threshold and be functional in all other spaces other than the affected space and return to nearest port. (b) Capable of withstanding a flooding of any single watertight compartment and be functional in all other spaces other than the affected space and return to nearest port (c) Essential systems to be available to support the ship for duration of 3 hours after a fire beyond the threshold till abandonment.
94.	**Fire Fighting and Damage Control provisions and Arrangements**	As per INBR 312.
95.	**Fixed FF Systems**.	Fire Main distribution network with required hydrants is to be designed to comply with SOLAS and class requirements. Fixed Fire Fighting Systems for hazardous compartments and areas ie Paint Store, Bosun Store, Inflammable Store, Rope and Canvas Store, Wine and Alcohol Store, Oil Ghee Store, High Tension electric lines, Main Switch boards, POL Store, Battery Charging and storing compartment, Incinerator and Ship's Laundry are to be provided iaw class requirements.
96.	**Hospital Areas Fire Fighting Arrangement**.	Sprinkler system is to be provided complying with SOLAS and class requirements. Fire fighting in way of sensitive electronic and electrical equipment shall be treated separately.

Ser	Capability	Description
97.	**Galley Fire Suppression System**.	Automatic Galley Fire Detection and Fire Fighting system/Galley Fire Suppression System (GFSS) is to be provided with wet chemical suppression for Galley iaw Class requirements. ***Hot plate and deep fat fryer indication is to be provided outside respective Galleys and also in DCHQ.***
98.	**Alarm Systems**.	The following alarm systems are to be provided:- (a) Addressable Fire Detection System (AFDS) is to be provided for all compartments which are likely to remain locked/unmanned during non-working hours, to meet all requirements. (b) Addressable Flood Alarm System (AFAS) is to be provided iaw Class requirements.
99.	**Damage Control Head Quarters**.	A separate compartment is to function as Damage Control Head Quarters (DCHQ). DCHQ and ECR are to be collocated as Ship Control Centre (SCC) located amidship for easy access near the centre line with common entrance and exit point
100	**Enclosed Breathing Apparatus (BA) Charging System**.	Provision for charging of BASCCA cylinders to the recommended pressure of 300 bars is to be provided from the HP air main via enclosed BA charging filling stations.
101	**Ship Online Stability Monitoring System**.	**Online Stability Monitoring System** meeting requirement capable of performing intact stability and damage stability associated with actual loading conditions using direct application of user defined damages with remote sounding of major tanks.
102	**Comprehensive NBCD Allowance List (CNAL)**.	The CNAL to be provided as per list provided by *IN*. Adequate space is to be provided for stowage of CNAL items.

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td>103</td><td>Information Technology Requirements</td><td>The ship is to be provided with an Administrative Local Area Network (ALAN) to network all departments of the ship. LAN will facilitate sharing of resources (storage media, printers, application software) and electronic mail amongst users. The ALAN will include all aspects of provisioning Network Connectivity, Patch Management, Antivirus, Security Patches, Administration, etc. Details of Administrative Local Area Network (ALAN) to be established onboard are as follows: -
<table>
<tr><th>Ser</th><th>Item</th><th>Specifications</th></tr>
<tr><td>(a)</td><td>Servers and Chassis</td><td>Six Blade Servers along with Chassis. The Hardware specifications should be as per IT hardware specs promulgated on yearly basis or latest available at the time of installation. Smart rack type UPS with 30 minutes backup power to be provided.</td></tr>
<tr><td>(b)</td><td>Unified Storage</td><td>8 TB SAN and 6 TB NAS usable capacity in RAID 5 configuration.</td></tr>
<tr><td>(c)</td><td>Access Layer Switches (L2)</td><td>24 Port Managed switches with fibre termination. All Switches to be provided with 1 KVA smart rack type UPS with 30 minutes backup power.</td></tr>
<tr><td>(d)</td><td>Core Switch (L3)</td><td>24 Port Managed switch with fibre termination with 1KVA smart rack type UPS with 30 minutes backup power.</td></tr>
<tr><td>(e)</td><td>Desktop PCs</td><td>For officers, admin offices & to meet admin functionalities. Hardware is to be as per latest IT Minimum Hardware Specifications promulgated by DIT. All PCs to be provided with 1 KVA UPS for 30 minutes backup power. Min. recommended quantity of PCs is 60 with a tolerance of +20%</td></tr>
</table>
</td></tr>
</table>

Ser	Capability	Description			
			(f)	Printers	Network laser printers, Dot matrix printers, Stand-alone Laser Printers, Multi-function Printing devices (A3 size, copier, scanner) functionality. Qty as per requirement.
			(g)	Portable Workstations	For CO & HsOD
			(h)	Scanner	As per requirement
			(j)	I/O boxes or Node points	Equal to no of PCs on LAN & Network/ Multifunctional printers (+20% additional) node points in all central places like MCR lobby, JS and SS Dining halls, Ward Room, Foxle, Midships, Quarterdeck (port and starboard sides) etc. In addition, I/O boxes on the weather deck are to be IP 67 compliant. Minimum of 03 such I/O boxes are to be provisioned to cater for LMC connectivity and gangway kiosks.
104	**Network Capabilities**	(a) Self-Managed Network (b) Automated Routing of Data Traffic (c) Backward Protocol Compatibility (d) Modularity (e) IPv6 Compliance			
105	**Hardware configuration**.	The hardware configuration for desktop PCs, Servers, Portable workstations and UPS be incorporated from the hardware specifications promulgated by IHQ MoD(N)/ DIT at the time of procurement.			

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td>106</td><td>EMI/ EMC Specifications and Environmental specification</td><td>The proposed system will satisfy the provision of CE/ FCC or equivalent specifications for EMI/ EMC and environmental requirements</td></tr>
<tr><td>107</td><td>Logistics Management.</td><td>Facilities for full exploitation of ILMS/ SLMS and other contemporary Logistics Management Systems as part of OPILMS are to be provided. All requisite detail of equipment, OBS and B&D spares is to be provided on magnetic structure and format compatible with INCAT format. All necessary ship’s documentation, such as SFD, list of Portable fitting, Spare gear, Equipment Schedule and D787 are to be in conformity with INCAT format.</td></tr>
<tr><td>108</td><td>Refrigeration.</td><td>Cold and Cool rooms are to be provided to carry poultry, mutton, and fresh provisions as follows:-
<table>
<tr><th>Ser</th><th>Storage</th><th>Temp</th><th>Capacity</th></tr>
<tr><td>(a)</td><td>Meat Room</td><td>-18° C</td><td>90 cu. m.</td></tr>
<tr><td>(b)</td><td>Fish Room</td><td>-18° C</td><td>30 cu. m.</td></tr>
<tr><td>(c)</td><td>Veg Room</td><td>+2° C</td><td>90 cu. m.</td></tr>
<tr><td>(d)</td><td>Dairy Room</td><td>+ 2° C</td><td>25 cu. m.</td></tr>
<tr><td>(e)</td><td>Lobby</td><td>-</td><td>20 cu. m.</td></tr>
<tr><td>(f)</td><td>Cargo Vegetable Space</td><td>+ 2° C</td><td>90 cu. m.</td></tr>
<tr><td>(g)</td><td>Dry provision stores (3)</td><td>+ 15° C</td><td>300 cu. m.</td></tr>
<tr><td>(h)</td><td>Deep Freezer - 03</td><td></td><td>300 KG each (Galley RU store)</td></tr>
</table></td></tr>
<tr><td>109</td><td>Provision Store</td><td>03 x Dry Provision Store for stowage of Atta & Bagged Provision, Oil/ Ghee and Tinned Provision.</td></tr>
<tr><td>110</td><td>Accommodation</td><td>(a) <u>Ship’s Officers</u>.

(i) 01 x Twin cabin suite, with separate day and night cabins, with attached toilet and bath for CO.</td></tr>
</table>

Ser	Capability	Description
		(ii) 06 x Twin-bunk cabins for HsOD. (iii) 06 x Twin bunk cabins for ship's officers. (iv) 01 x 4-Bunk cabin for U/T officers. (b) **Medical & Dental Officers**. (i) 01 x Twin cabin suite, with separate day and night cabins, with attached toilet and bath for Senior Medical officer. (ii) 08 x Twin bunk cabins for HsOD. (iii) 06 x Twin bunk cabins for medical officers. (iv) 04 x 04 Bunk cabins for medical officers. (c) **MNS Officers**. (i) 02 x Twin bunk cabin for Senior MNS Staff. (ii) 04 x 04 bunk modular cabin. (d) **Ship's Sailors**. (i) **Senior Sailors**.

Ser	Capability	Description
		(aa) 05 x 04 bunks modular mess for MCPO regulators. (ab) 05 x 06 bunks modular messes for senior sailors. (ii) **Junior Sailors**. 07 x 10 bunk modular messes. (iii) **Regulating Staff**. 01 x Twin bunk modular mess cum office for Regulating Staff (iv) **Medical Sailors**. (aa) **Senior Sailors**. (aaa) 03 x 04 bunks modular mess for MCPO regulators. (aab) 05 x 06 bunks modular messes for senior sailors. (ab) **Junior Sailors**. 04 x 10 bunk modular messes. (v) **Civilian Staff**. (aa) 01 x 10 bunk mess for all Civilian Support Staff. (ab) 01 x 10 bunk mess for Civilian Ward Sahayaks.

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td>111</td><td>Dining and Recreation</td><td>(a) Separate dining and recreational areas for ship's Officers, medical officers and MNS officers
(b) Separate dining and recreational areas for ship's senior sailors and medical senior sailors
(c) Separate dining and recreational areas for ship's junior sailors and medical junior sailors</td></tr>
<tr><td>112</td><td>Sanitary and Ablution Facilities</td><td>Considering the large complement of women officers expected to be borne onboard, it should be endeavoured to have a majority of officer cabins are to be provided with attached or adjacent bath/ WC spaces. At minimum, all HoD cabins should be provided with attached bath/ WC. The minimum number of WC stations, urinals and washbasins to be provided for ship's crew and medical staff are to be as follows: -
<table>
<tr><th>Ser</th><th>Category</th><th>Spaces</th><th>Bath</th><th>WC</th><th>Urinals</th><th>Wash basins</th></tr>
<tr><td>(a)</td><td>Ship Sr Sailor</td><td>02</td><td>10</td><td>10</td><td>04</td><td>10</td></tr>
<tr><td>(b)</td><td>Ship Jr Sailor</td><td>02</td><td>20</td><td>20</td><td>04</td><td>20</td></tr>
<tr><td>(c)</td><td>Medical Sr Sailor</td><td>02</td><td>10</td><td>10</td><td>04</td><td>10</td></tr>
<tr><td>(d)</td><td>Medical Jr Sailor</td><td>02</td><td>10</td><td>10</td><td>04</td><td>10</td></tr>
<tr><td>(e)</td><td>Bridge</td><td>01</td><td>-</td><td>01</td><td>01</td><td>01</td></tr>
</table></td></tr>
<tr><td>113</td><td>Offices</td><td>The ship is to have Commander's Office, Engineer's Office, Electrical Office, Ship's Office, Store Office, Main Signal Office, NBCD Office, CB Office with Safe, racks and cupboards for stowage, BR Office with racks and cupboards for stowage of BRs, Regulating Office with twin bunks for Provost Staff, Diving office and Store, Wardroom Mess Office and Store with adjacent Wine Store.</td></tr>
<tr><td>114</td><td>Stores</td><td>Ship is to have Naval Store, Dry tin/provision store, Atta Store/Ghee Store, Diving Store, Clothing Store, Victualing Stores, Bosun's Store, Paint Store, Gunner's Stores, Air Store, Engineering and Electrical Spare Stores, NBCD Store, Canteen Store, HADR Store, Shipwright Store, Inflammable Store for POL and Medical Store.</td></tr>
<tr><td>115</td><td>Misc. Habitability</td><td>(a) One Conference Room</td></tr>
</table>

<table>
<tr><th>Ser</th><th>Capability</th><th colspan="3">Description</th></tr>
<tr><td></td><td>Arrangements</td><td colspan="3">(b) One Ship's Canteen
(c) One health club, GYM
(d) One AC library
(e) One tailor shop
(f) One barber shop
(g) One ship's laundry</td></tr>
<tr><td>116</td><td>Stowage of 20' Containers</td><td colspan="3">Six – eight in number 20' containers would be provisioned and stowed near the helo deck in both port & starboard arrangement. The containers would be utilized for carrying supplies, portable medical equipment, medicines, ration etc. during HADR operations.</td></tr>
<tr><td>117</td><td>Deck Cranes.</td><td colspan="3">The ship is to be provided with two electro-hydraulic deck cranes of 25T SWL on port and starboard side. The cranes are to be utilised for loading/ unloading of 20' containers as well as embarkation/ disembarkation of ship's ambulances.</td></tr>
<tr><td>118</td><td>International codes</td><td>COLREG</td><td>Convention on the International Regulations for Preventing Collisions at Sea, 1972 including 1981, 1983, 1990, 1993 amendments and IMO resolution A.910(22)</td></tr>
<tr><td></td><td></td><td>IEC</td><td>Publication 92/TC(18) – Electrical Installation in Ships</td></tr>
<tr><td></td><td></td><td>ISPS</td><td>International Ship and Port Security Regulations</td></tr>
<tr><td></td><td></td><td>Load Line</td><td>International Convention on Load Lines, 1966 including 1971, 1975, 1979 amendments and 1988 Protocol</td></tr>
<tr><td></td><td></td><td>MARPOL</td><td>International Convention for Prevention of Pollution from Ships 1973/78 (MARPOL) and later Amendments, as applicable.</td></tr>
<tr><td></td><td></td><td>SOLAS</td><td>International Convention for the Safety of Life at Sea, with all its amendments to extent applicable for this type of vessel including latest amendments.

Lifesaving appliances and fire fighting arrangements to comply</td></tr>
</table>

<table>
<tr><th>Ser</th><th>Capability</th><th>Description</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>with SOLAS requirements. LSA and FFA equipment approval to comply as per SOLAS requirements.</td></tr>
<tr><td>Tonnage</td><td>International Convention on Tonnage Measurements of Ships, 1969, including all amendments.</td></tr>
<tr><td>Noise Levels</td><td>Code on Noise Levels on Board Ships-IMO Resolution MSC 337(91)</td></tr>
<tr><td colspan="2"><u>IMO Circulars</u></td></tr>
<tr><td>Res. MSC 137(76) incl. MSC circ. 1053</td><td>Recommended standards for Ships Manoeuvrability including explanatory notes</td></tr>
<tr><td>MSC.1/Circ.1291</td><td>Guidelines for Flooding Detection Systems on Passenger Ships</td></tr>
<tr><td colspan="2"><u>ISO Standards</u></td></tr>
<tr><td>ISO 6954:2000</td><td>Guidelines for the overall evaluation of vibrations in merchant ship.</td></tr>
</table>
</td></tr>
<tr><td>119</td><td>Diving Equipment.</td><td>Diving equipment and accessories are to be provided as per the ‘Diving Allowance List’ as promulgated by IHQ MoD (N)/DSOD. The equipment should form part of D-787 of the ship. Equipment are to be procured from vendors promulgated by IHQ MoD (N)/DSOD.</td></tr>
<tr><td>120</td><td>Ship’s Husbandry Tools</td><td>Shipyard will have to be supply Ship Husbandry Tools as per list promulgated by IHQ MoD(N) to all ships</td></tr>
<tr><td>121</td><td>CFD Studies and Model Testing</td><td>Shipyard will have to conduct model tests (resistance, self-propulsion, seakeeping, maneuvering, cavitation tests, etc) of the hull form provided by IHQ MoD(N) in Depressurised towing tank of an ITTC accredited facility in following two phases:-
(a) Detailed Design Stage.
(b) Post Construction in as-built condition.</td></tr>
<tr><td>122</td><td>PDM/ PLM</td><td>Product Data Management (PDM) and Product Lifecycle Management (PLM) are to be utilized</td></tr>
</table>

Ser	Capability	Description
		for effective management throughout life cycle of the ship.
123	**Base and Depot (B&D)Spares and Onboard Spares(OBS)**	Cost of supply of MRLS-B&D spares, up to 15% (excluding levies, taxes, handling charges, transportation, insurance, service tax on handling charges, etc) of the basic cost of the vessel , cost of services towards commissioning, setting to work, testing and tuning of spares and cost of MRLS-OBS for onboard scheduled servicing and maintenance of all equipment falling due up to two years of operation of the vessel after warranty period is to be included in the estimated cost by shipyard. PIL/CPIL of all spares is to be provided by the shipyard in ILMS format.
124	**Training**	The mandatory training shall be imparted to the ship's crew and maintainers by the OEM/ OEM reps / Shipyard, for the operation and maintenance of machinery and equipment installed onboard in consultation with Buyer. The ship's crew and shore maintenance staff and staff of training schools shall be trained at the Shipyards/ OEM's premises/ onboard (as applicable) on the operation and maintenance of hull, machinery and equipment installed onboard.
125	**Warranty/ Guarantee Cost**	Shipyard is to cater for warranty/guarantee support for the ship along with all equipment/systems installed onboard for at least 12 months post-delivery. Shipyard is to obtain the warranty/guarantee support for all BNE too. Guarantee support is to be extended at the base port of the vessel.
126	**Preservation and Stowage of Equipment**	Shipyard is to cater for preservation and stowage of equipment during construction phase on order to ensure their functionality at the time of installation.
127	**Documentation**	Latest version of IETM to be provided. The content of IETM should be in database format, such that it contains fields of text, graphics and link data, all associated with a 3D CAD model of ship system.
128	**Project Management Facilities**.	Project Monitoring System (PMS) shall be established and provided by the Yard on turnkey basis. Capabilities of the PMS required by the buyer is placed at **Annexure 4 to Appendix A.**
129	**Miscellaneous Expenditure**	Expenditures incurred towards organising milestone ceremonies such as keel laying, launching, delivery, commissioning are to be borne by the shipyard.

Appendix B

LIST OF BUYER NOMINATED EQUIPMENT

Ser	Equipment	Vendor
1.	1KW HF Tx with ALE and High Speed Data Modem	M/s Avantel Hyderabad
2.	SDR(NC)	M/s BEL, Bengaluru
3.	SDR(TAC)	M/s BEL, Bengaluru
4.	All Wave Rx with HSDM & MSK demodulator (EK 896)	M/s BEL, Panchkula
5.	HD VLF Rx Receiver	M/s BEL, Panchkula
6.	DMR-16A	M/s BEL, Bengaluru
7.	Inmarsat C with EGC (with battery backup/UPS)	M/s AS Moloobhoy Pvt.Ltd, Mumbai
8.	VHF MMB with DSC	M/s ELCOME Mumbai
9.	SART	LTE Basis
10.	EPRIB	
11.	NAVTEX Receiver	
12.	HF portable Tx/Rx/ PRC 6020A	M/s BEL, Bengaluru
13.	VHF Motorola XIRP 8668i hand held with Assy	M/s Arya Communication & Electronics Services Pvt Ltd
14.	Hand held V/UHF Tx/Rx SDR(HH)	M/s BEL, Bengaluru
15.	VHF equipment (Man pack version) LUP 329	M/s BEL, Bengaluru
16.	Link II (Messaging Consoles-02, Tacticles Consoles- 01, Mobile Terminals-02)	M/s BEL, Bengaluru
17.	FBB 500	ELCOME Marine, Mumbai
18.	Rukmani LSST (Terminal (C&Ku)	M/s BEL, Gaziabad
19.	Rukmani encryptor Scorpio Mk II	M/s BEL, Gaziabad
20.	MSS TX/RX MK II	M/s Avantel Hyderabad
21.	MSS Secrecy Device (Gautam)	M/s Avantel Hyderabad

Appendix C

{Refers to Para 7(c)}

QUESTIONNAIRE FOR NATIONAL HOSPITAL SHIP

1. What are the comments on proposed Delivery Schedule of the Vessel?

2. What is the capacity/ infrastructure of the shipyard to meet the delivery schedule?

3. What would be the approximate cost of the vessel (material cost, labor cost, training cost, product support cost (if applicable) and taxes) and shipyards financial capability to undertake the project?

4. What is the past experience of shipyard in similar projects?

5. What are your order book status?

6. Details to be submitted for generating/ refining/ rationalizing the SQRs prior issuance of RFP.

7. Furnish details that go into determining the cost of the scheme, including factors such as Annual Maintenance Contract (AMC), product support package, training, documentation, etc.

8. Furnish details of capability clearance certificate to indigenously design and develop the required equipment/ platform.

9. What are the applicable key technologies and materials required for manufacturing of the equipment/ system/ platform and the extent of their availability or accessibility in case they are not available in India?

10. What is the approximate cost estimation and suggestions for alternatives to meet the same objective as mentioned in RFI?

11. What are the capabilities of Indian Shipyards to Indigenously Design, Develop and Manufacture (IDDM) the required equipment?

12. Availability of the equipment/ system/ platform in the Indian market, level of Indigenization, delivery capability, maintenance support, life time support, etc.

13. Will there be a collaboration with experienced foreign shipyard for detailed design and construction of the envisaged NHSs? If so, forward information of shipyard collaboration with foreign shipyards.

14. Furnish details of the hospital design consultant intended to be hired by the shipyard for design and construction of NHS.

Appendix D

{Refers to Para 7(c)}

VENDOR INFORMATION PROFORMA

1. **Name of the Vendor/ Company/ Firm and Unique ID (if any).**

_____

_____

(Company profile including Share Holding pattern, in brief, to be attached)

2. Type (Tick the relevant category)**.**

Original Equipment Manufacturer (OEM) Yes/ No

Authorised Vendor of foreign Firm Yes/ No (attach details, if yes) Others (give specific details) _

_____

_____

3. Contact Details.

Postal Address: _

_____

City**:** _

_____State**:**_

_____ Pin Code**:**_

_____Tele **:**

_____ Fax:_

_____URL/Web Site**:** _

_____ Email **:** _

_____

4. Local Branch/ Liaison Office in Delhi (if any)**.**

Name & Address: _____

Pin code :_____Tel :_____Fax:_____E mail : _____

5. **Financial Details**. Category of Industry (Large/ medium/ small Scale) :_

6. Certification by Quality Assurance Organisation.

Name of Agency	**Certification**	**Applicable from (Date &Year)**	**Valid till (Date &Year)**

7. **Details of Registration.**

Agency	**Registration No.**	**Validity(Date)**	**Equipment**
GeM			
DGQA/DGAQA/ DGNAI			
OFB			
DRDO			
Any other Government Agency			

8. **Membership of FICCI/ ASSOCHAM/ CII or other Industrial Associations**.

Name of Organization : _____

Membership Number : _____

9. Equipment/ Product Profile (to be submitted for each product separately)

(a) Name of Product :_
(IDDM Capability be indicated against the product)

(Should be given category wise for e.g. all products under night vision devices to be mentioned together)

(b) Description (attach technical literature): _____

(c) Whether OEM or Integrator : _____

(d) Name and address of Foreign collaborator (if any):_____

(e) Industrial License Number : _____

(f) Indigenous component of the product (in percentage): _____

(g) Status (in service / design & development stage): _____

(h) Production capacity per annum:_____

(j) Countries / agencies where equipment supplied earlier (give details of quantity supplied) : _____

(k) Estimated price of the equipment _____

10. Alternatives for meeting the objectives of the equipment set forth in the RFI.

11. Any other relevant information:_____.

12. Declaration

(a) It is certified that the above information is true and any changes will be intimated at the earliest.

(b) It is certified that in the past _____(name of firm) has never been banned/ debarred for doing business dealings with MoD/ GoI/ any other Government Organisation and that there is no inquiry going on by CBI/ ED/ any other Government agency against the firm.

(Authorised Signatory)

Appendix E

{Refers to Para 7(c)}

ADDITIONAL INFORMATION PROFORMA (INDIAN SHIPYARDS)

1.	Year Established							
2.	Type of Organisation size/Classification of Yard							
3.	Organisation setup and availability of skilled Manpower							
4.	Details of design, planning and production facilities/infrastructure including slipways/ dry docks and wet basin/water front (attach brochures etc.)							
5.	Annual build capacity (in tonnage)							
6.	Details of future expansion and business development planned							
7.	Vessels delivered in last 05 years. (attach previous order copies for similar vessels only)							
	Yard	Customer	Type of vessel	Dwt,grt	Order date	Start production	Contractual delivery	Actual delivery
8.	Orders in hand (attach order copies for similar ships/ crafts only)							
	Yard	Customer	Type of vessel	Dwt, grt	Order date	Start production	% completed	Expected delivery
9	Financial information (in INR for Indian vendors and in US dollars for foreign vendors)							
	(a)	Annual turnover in the last three financial years (year wise)						
	(b)	Profits made						
	(c)	Net Worth = equity+ reserves						
	(d)	Debt/Equity ratio						

	(e)	Quick Ratio = (current assets long term debts)/current liabilities	
	(f)	Attach copies of certified published annual report showing turnover and financial status in support of above information	
10	Detailed specifications of NHS offered to meet the specified requirements and build period from date of order		
11	Detailed specifications of commercially off the shelf (COTs) NHS if available for outright purchase, if any		

(Authorised Signatory)

Appendix F

{Refers to Para 9}

GUIDELINES FOR FRAMING CRITERIA FOR VENDOR SELECTION/ PREQUALIFICATION IN 'BUY (INDIAN-IDDM)' 'BUY (INDIAN)' AND 'BUY & MAKE (INDIAN)' CASES

1. The guidelines prescribed for short-listing/ pre-qualification of Indian vendors in Buy (Indian-IDDM), Buy (Indian) & Buy & Make (Indian) cases are enumerated in the succeeding paragraphs. Paragraph 2 deals with the parameters that may be considered for short-listing of vendors, whereas Paragraph 3 amplifies the process for applying selected parameters to the process of Vendor Short listing.

2. Parameters**.**

(a) General Parameters.

(i) Applicant Entity should be an Indian Vendor as defined at Paragraph 20 of Chapter I of DAP 2020.

(ii) Business dealing with applicant Entity or any of its allied entities should not have been suspended or banned, by MoD/ SHQ or any Government Department or organization (as defined in Guidelines for Penalties in Business Dealings with Entities issued vide Ministry of Defence, D(Vigilance) MoD ID No 31013/I/2006- D(Vig) Vol II dated 21 Nov 2016). None of the Promoters and Directors of applicant entity should be a wilful defaulter.

(iii) "Entities" will include companies, with whom the Ministry of Defence has entered into, or intends to enter into, or could enter into contracts or agreements.

(iv) "Applicant entity" may be a company, subsidiary, an associate company (as defined in the Companies Act, 2013), a consortium or a Joint Venture (JV).

(b) Technical Parameters**.**

(i) Vendor shall be a manufacturing entity or a system integrator of defence equipment and not a trading company, except in cases where the OEM participates only through its authorised Vendors.

(ii) Minimum **two years**' experience in **broad areas like manufacturing/ electronics/ explosives etc. as applicable in the**

instant procurement case. If not, then cumulative experience of **at least three years in above areas**, resulting in gaining of competence for manufacturing the proposed product. (In case the SHQ feels that for a particular equipment a lesser experience could be accepted, then the same should be got approved by the competent authority before including the same in the RFP).

(iii) Where product involves integration, previous experience of not less than one year/ one project in integration of systems/ equipment shall be required.

(c) Financial Parameters**.**

(i) **Average Annual Turnover**. Minimum average annual turnover for last three financial years, ending 31 March of the previous financial year, should not be less than 30% of estimated cost of the Buy (Indian-IDDM) and Buy (Indian) project and for Buy & Make (Indian) should not be less than 30% of estimated cost of the Make portion.

(ii) **Net Worth**. Net worth of entities, ending 31st March of the previous financial year, should not be less than 5% of the estimated cost of the Buy (Indian- IDDM) and Buy (Indian) project and for Buy & Make (Indian) should not be less than 5% of estimated cost of the Make portion. For orders above ₹ 5000 crores, the Networth of group companies can be considered on production of suitable documentary assurance.

(iii) **Insolvency**. The entity should not be under insolvency resolution as per Indian Bankruptcy Code at any stage of procurement process from the issuing of RFP to the signing of contract.

(iv) **Credit Rating (Desirable Financial Parameter)**. Long term credit rating equivalent to CRISIL rating on Corporate Credit Scale as CCR-BBB or better, and SME-04 or better for SMEs issued by credit rating agencies recognized by SEBI. Credit rating should be as on 31st March of the previous financial year.

(**Note 1**: All the above Financial Parameters, except Paragraph 2(c)(iii) above (Insolvency) will not be applicable for Capital Acquisition cases where estimated cost is ₹150 crores and below. However, Net worth of entities should not be **negative**.

Note 2: The turnover and net worth of the vendor shall be rounded off to the nearest lower ten/ hundred crores so as to keep the estimated

cost of procurement confidential).

(d) Other Parameters**.**

(i) **Industrial License (IL)**. Vendors should be either holding a valid defence industrial license or should have applied for the same before responding to RFP. In any case the vendor must confirm holding of IL before commencement of FET. (Items requiring IL will be as per DIPP Press Note 3 of 2014 as amended from time to time).

(ii) **Registration**. Registered for a minimum of two years (one year for SMEs). Minimum number of years not applicable for JVs constituted specifically for a project.

3. Stipulations for Applying Parameters**.**

(a) **Areas like manufacturing/ electronics/ explosives etc**. referred at Paragraph 2(b)(ii) should be defined in each case of procurement.

(b) In case the Applicant Entity is unable to meet the Financial Parameters by itself, it may rely on its **Holding Company** (as defined in the Companies Act, 2013 and amendments thereof) ("Companies Act") for fulfilment of the Financial Parameters, in which case reliance must be placed on the Holding Company towards fulfilment of **ALL** the Financial Parameters.

(c) In case the Applicant Entity is unable to meet one or more of the Technical Parameters by itself, it may rely on a Group Company (ies) for fulfilment of the Technical Parameters. A Group Company in relation to the Applicant Entity may be:-

(i) A company of which the Applicant Entity it is an Associate Company. Such company should have ownership, directly or indirectly, of at least 26% of the voting shares of the Applicant Entity.

(ii) A company which is an Associate Company of the Applicant Entity. The Applicant Entity should have ownership directly or indirectly, of at least **26%** of the voting shares of such Associate Company.

(iii) A Company with whom the Applicant Entity is commonly owned, directly or indirectly, for at least **26%** of the voting shares by another company. For example: An Applicant Company A is an Associate Company of Company B, in which B holds at least 26%. Further, C is also an Associate Company of B, in which B holds at least 26%. In this case the Applicant Company may use the credentials of C as well.

(iv) The Holding Company and Subsidiary Companies (as defined

under the Companies Act) of the Applicant Entity.

(d) The Applicant entity may be a single entity or a group of entities (the "Consortium"), coming together to implement the project. In such case:-

(i) The credentials of only those members or their related entities may be counted, who have at least **26%** equity stake in the Consortium.

(ii) Each Consortium should have a designated Lead Member.

(iii) For Technical Parameters, **any of the Consortium members or their Group Companies** may meet the criteria.

(iv) For Financial Parameters; the Turnover and Net Worth of the Consortium Member shall be reckoned **proportionate to Consortium Member's equity stake** in the Consortium, and each Consortium member should meet the other criteria pertaining to Insolvency and Credit Rating. In case the Consortium Member relies on its Holding Company for any one of the above-mentioned Financial Parameters, then reliance must be placed on the Holding Company for meeting **all the financial Parameters**.

(e) Vendors should provide all necessary self-authenticated documentation in support of their achievement of criteria. Such documentation should inter-alia include:-

(i) Details of projects/ supply orders successfully executed in the last two years.

(ii) Annual reports for three years of applicant entity, parent and associate companies, consortium and JV partners.

(iii) Details of shareholders, promoters, associated, allied and JV companies.

(iv) Details of vigilance action, viz. ongoing investigation and suspension/ debarment/ blacklisting actions against the applicant entity or any of its allied entities, parent company or consortium and JV partners, if any by any Department/agency of Central Government.

(v) A certificate from CA/CS indicating the financial parameters for the last three years as per Paragraph 2(c).

(**Note**: If a vendor is already a supplier to MoD and/ or has already provided the above documents in such cases, it should be necessary for the vendor to resubmit only such documentations as is necessary to update the above).

(f) Any vendor furnishing false information will be liable for action as per existing guidelines.

(g) Based on these generic parameters, more specific criteria should be evolved by the SHQ with regard to Technical and Financial parameters {Paras 2(b) and 2(c) above} in each procurement case depending upon requirements peculiar to each case keeping in view the overall need to ensure wider vendor participation. The specific criteria evolved by the SHQ for each case, as per these guidelines, may be got approved by the competent authority before including the same in the RFPs.

4. The criteria for vendor selection shall be clearly stipulated in RFPs so as to maintain transparency. Care shall be taken to ensure that the stipulated criteria are not open to subjectivity and arbitrary interpretation.

Annexure 1 to Appendix 'A'

MEDICAL EQUIPMENT FOR 250-BED HOSPITAL SHIP

Ser	Nomenclature	A/U	Total Qty
1	Leg rest for lithotomy position (chromium plated)	No	10
2	Leg rest sling for	No	10
3	Stand Instruments MAYO adjustable with tray (SS) Complete	No	5
4	Stand swab consisting of 36 SS hooks SS frame with castor & SS drip tray	No	5
5	Stool adjustable with (SS) top	No	40
6	Table anaesthetic SS with drawers	No	5
7	Table instrument, folding light SS with two SS shelves complete	No	30
8	Table operating folding light weight version	No	10
9	Table operation, sponge rubber pads, set of 3	Set	10
10	Medical Refrigerator (2° C to 8°C) – Mini (100L capacity)	No	25
11	Apparatus Anaesthesia Basic	No	10
12	Apparatus Anaesthetic face mask (Antistatic) with, air cushion (Transparent) size 3 adult with valve	No	20
13	Apparatus Anaesthetic face mask (Antistatic) with air cushion(transparent) size 4	No	20
14	Apparatus oxygen concentrator provides 95% O2 purity at 10 LPM	No	15
15	Cylinder Nitrous Oxide (N2O) 955 ltr with pin index non-interchangeable flush type valve painted BLUE empty for	No	50
16	Cylinder Oxygen (O2) 340 ltr, with pin -index non interchangeable flush type valve painted BLACK with white valve end empty for	No	100
17	Cylinder Oxygen (O2) 623 ltr with nose fitting valve painted Black be issued in place with white valve end empty for	No	100
18	Cylinder Oxygen Bull nose fitting fine Adjustment valve with pressure gauge and Bobbin flow meter with double walled tube	No	20
19	Cylinder Oxygen Key spanner for	No	60

Ser	Nomenclature	A/U	Total Qty
20	Cylinder Oxygen stand (to hold 623 ltr/ cylinder)	No	50
21	ECG/ NIBP/ SPO2/ TEMP Monitor	No	50
22	Forceps Endo tracheal for introducing Endo tracheal tubes adult size	No	10
23	Forceps tongue	No	10
24	Intubating Video Laryngoscope	No	4
25	Portable transport ventilator and defibrillator integrated with portable oxygen cylinder	No	10
26	Infusion warming system	No	15
27	Laryngoscope (Adult) complete	No	15
28	Mouth gag with rack 19 cm long (SS)	No	5
29	Mouth prop and airways aluminium set of 3 complete	No	10
30	Nebuliser Electric	No	15
31	Outfit resuscitation Ambu MK-III complete with oxygen reservoir attachment patient valve and Ambu peep valve (Adult)	No	20
32	Pulse Oximeter Hand held	No	30
33	Rapid infusion set	No	20
34	Rebreathing attachment for set of complete.	Set	5
35	Steriliser Portable vertical pressure type size 350 x 325 mm, deep operable upon Electricity	No	20
36	Steriliser steam high pressure complete	No	10
37	Steriliser steam portable high pressure drum for 225 x 225 mm deep	No	20
38	Steriliser steam high pressure drum shallow for size 275 mm x 125 mm	No	20
39	Steriliser steam high pressure drum deep for 275 mm x 240 mm	No	20
40	Compact steam steriliser table top Model for instruments with vacuum facility, Electrically operated 3 phase, 440 V supply Temp 121-134 C with digital display of data	No	10
41	Total temperature management blanket model 310 (Adult)	No	15
42	Transport Ventilators	No	15
43	Basic ICU ventilator : with volume, pressure & non-invasive models of ventilation	No	20

Ser	Nomenclature	A/U	Total Qty
44	Foot operated suction machine (Medical)	No	10
45	Aspiration unit, double bottle portable 220/230V, AC 50 Hz complete with tube suction and pressure tubing, two bottles of 1 ltr capacity suction and pressure regulators, vacuum gauge, electric motor 1/4 HP, pressure purifier and automatic oiler	No	10
46	Brace, for all burs and Drills	No	5
47	Bur, 4 mm (To fit Brace)	No	5
48	Bur, 8 mm (To fit Brace)	No	10
49	Bur, 12 mm (To fit Brace)	No	10
50	Bur, 16 mm (to fit brace)	No	10
51	Clamp, intestine, crushing lever action payr blades 10 cm, medium size	No	20
52	Clamp, intestine, 10 cm blades	No	40
53	Dissector, fine, with probe, 19 cm	No	20
54	Elevator, Dura-Mater, double ended	No	10
55	Elevator, Periosteal sharp curved	No	10
56	Forceps stomach curved on flat 22.3 cm stainless steel	No	20
57	Forceps Vascular tissue straight 7 1/4"	No	20
58	Forceps Mixter 7.5 "	No	10
59	Forceps Mixter 9"	No	10
60	Forceps, Artery curved on flat, 14.5 cm	No	50
61	Forceps, Artery straight 14 cm	No	60
62	Forceps, Artery, curved on flat 12.5 cm	No	60
63	Forceps, Artery mosquito, curved on flat, 12.5 cm box joint, stainless steel	No	50
64	Forceps, Artery 15 cm	No	60
65	Forceps Artery curved on flat serrated jaws, screw joint, 22.86 cm	No	20
66	Forceps, Artery, straight box joint 13 cm	No	50
67	Forceps, Artery, straight box joint 20 cm	No	60
68	Forceps, Bone cutting, 25 cm	No	20
69	Forceps gouge, bone cutting curved on flat, with 8 mm wide round jaws, length 17 cm stainless steel (luer type)	No	10
70	Forceps dissecting fine 12 cm long with tooth, notch and serration, stainless steel	No	30

Ser	Nomenclature	A/U	Total Qty
71	Forceps, dissecting 15 cm	No	20
72	Forceps, dissecting, serrated 13 cm	No	20
73	Forceps dissecting serrated 18 cm	No	20
74	Forceps, dissecting, toothed, 12.5 cm	No	20
75	Forceps, dissecting, toothed 18 cm	No	20
76	Forceps, gauge, angular, double action 22.85 cm long	No	10
77	Forceps, intestinal extra light, box joint, 20.32 cm	No	40
78	Forceps intestine holding 18 cm	No	10
79	Forceps lung grasping with blade 2.5 cm wide 20.5 cm long	No	10
80	Forceps, mixter, box joint 22.86	No	20
81	Forceps, pedicle, curved on flat	No	20
82	Forceps, sinus, 18 cm	No	10
83	Forceps sponge holding with serrated jaws 24 cm	No	40
84	Forceps, steriliser (Cheatle)	No	30
85	Forceps, tissue, 4x5 teeth, 20 cm, screw joint, stainless steel	No	25
86	Forceps tissue 15 cm	No	40
87	Forceps, towel holding cross action	No	80
88	Forceps towel holding, single tooth	No	100
89	Headlight with adjustable head band 7 1/2 feet length with fibre-optic cable of 4 mm diameter in leather case	No	20
90	Hook, blunt, double	No	20
91	Knife amputation blade, 12 cm long, carbon steel chromium plated	No	40
92	Knife Bard parker, handle size 1 fitting (Commercial No. 3) for use with commercial blade No 10,11,12, and 15	No	50
93	Knife Bard parker, handle size 2 fitting (Commercial No. 4) for use with commercial blade No.20,22,23	No	50
94	Needle holder, 19 cm box joint	No	60
95	Percussor (Babinski)	No	10
96	Retractor abdominal, 100 mm wide blade, stainless steel	No	40
97	Retractor abdominal, stainless steel 30.3 cm x 5 cm wide	No	20
98	Retractor two pronged, blunt 0.95 cm wide x 20 cm long, stainless steel	No	20

Ser	Nomenclature	A/U	Total Qty
99	Retractor abdominal 60 mm wide blade, stainless steel	No	20
100	Retractor langenback 4.5 cm x 1.25 cm	No	60
101	Saw, amputating, handle only	No	10
102	Saw, amputating 18 cm blade, for set of 3	No	20
103	Saw, Gigli, set of 2 Handle, for	No	10
104	Wire saw total length 50 cm, carbon steel chromium plated, Gigli type	No	40
105	Saw, guide and protector, for Adult size	No	10
106	Scissors, curved on flat 19 cm	No	20
107	Scissors, shop 23.5 cm long carbon steel chromium plated (Lister type)	No	20
108	Scissor, dressing, sharp and blunt, 14 cm long SS	No	40
109	Scissor, dressing st, both points sharp 12.5 cm	No	10
110	Scissor, lobectomy, curved on flat stainless steel 22.5 cm	No	10
111	Scissor straight 19 cm	No	30
112	Syringe and Needle destroyer	No	50
113	Separator, rib, with locking lever	No	20
114	Shears, rib, combined action	No	20
115	Shears, rib with raspatory, adult	No	10
116	Spatula Brain, large malleable	No	10
117	Digital Sphygmomanometer	No	40
118	Stethoscope folding with flat diaphragm type chest piece	No	100
119	Tape, measure, linen 1.5 metre	No	10
120	Torch, hand chromium plated, brass standard cells fitted with a bulb of 6.2 V without cell	No	50
121	Pneumatic tourniquet with manometer and pump, complete	No	20
122	Auroscope, Fibre optic Light transmission, Halogen Lamp 3 V using two AA size battery complete with Siegel Attachment and spare lamp	No	20
123	Combined Unipolar and bipolar cautery with standard accessories	No	10
124	Depressor, Tongue, large, 1.9 cm wide	No	10
125	Dilator Trachea with spring 12.5 cm long SS	No	10

Ser	Nomenclature	A/U	Total Qty
126	Forceps nasal 45 degree upturned working length 10 cm, size 2	No	10
127	Forceps Nasal Straight working length 10 cm size 1	No	10
128	Forceps Ear dressing 14 cm stainless steel	No	10
129	Forceps, Nasal, dressing	No	10
130	Forceps, Peri-tonsillar	No	10
131	Retractor, Mastoid	No	10
132	Speculum, Nasal, size 6	No	10
133	Loupe, Binocular, Berger with elastic head band	No	10
134	Needle, corneal, foreign, body, Birmingham pattern.	No	10
135	Slit Lamp & Binocular Microscope with accessories. (For components see annex)	No	01
136	Speculum eye (Castroviejo) medium	No	10
137	Spud, eye	No	10
138	Ophthalmoscope Direct	No	01
139	External Fixator Tubular Set Complete	Set	10
140	External stabilisation system complete ,large	No	10
141	External stabilisation system complete , medium	No	10
142	External Stabilisation system small set complete	Set	10
143	File, Bone	Set	10
144	Forceps, bone holding (Lane), for large bones, 29.35 cm	No	20
145	Forceps, plaster bending	No	10
146	Gouge, "St. Thomas Hospital Pattern" with rounded end, width 0.78 cm	No	10
147	Metal Mallet small with three rubber caps carbon steel with chromic plating, aluminium handle	No	10
148	Osteotome , curved, stainless steel, 20.32 cm long, 2.54 cm wide	No	10
149	Pins (Steinmann) 15 cm X 4 mm dia S.S. trocar point 3 faced chuck end	No	50
150	Raspatory curved 1.75 cm long with 12 mm blade stainless steel (Farabent type)	No	10
151	Retractor short narrow tip small with 6 mm	No	20
152	Retractor short narrow tip small with 8 mm	No	20
153	Retractor short narrow tip 18mm	No	20

Ser	Nomenclature	A/U	Total Qty
154	Retractor's long shank, angled 43mm	No	20
155	Self retaining bone holding forceps, set of 6 .	No	20
156	Saw, plaster (Engel)	No	10
157	Scoop (Stanley Boyd), double ended	No	20
158	Shears, plaster (Bohler), stainless steel, 24 cm	No	10
159	Shears, plaster (Stille), 38 cm	No	10
160	Splint, Aeroplane, adult size	No	20
161	Stirrup, Extension (Bohler), 8.75 cm internal width	No	40
162	Small hand drill	No	10
163	Automatic Electronic Tourniquet System	No	10
164	Babcock Tissue Forceps box joint 6"	No	20
165	Battery operated drill & saw system	Set	10
166	Bed Traction Kit (Size Universal)	No	20
167	Bone holding forceps self centering with soft lock, for femur and tibia	No	20
168	Bone holding forceps self centering with soft lock, Large	No	20
169	Bone holding forceps self centering with soft lock, Medium	No	20
170	Bone holding forceps self centering with soft lock, small	No	20
171	Homans bone retractors 18mm wide	No	20
172	Homans bone retractors 22mm wide	No	20
173	Homans bone retractors 24mm wide	No	20
174	Homans bone retractors 43mm wide	No	20
175	Homans bone retractors 8mm wide	No	20
176	LC- DCP Basic Instrument (For Components see appx)	Set	10
177	LCP 3.5 Instrumentaion (For Components see appx)	Set	10
178	LCP 4.5/5.0 Basic Instrument (For Components see appx)	Set	10

Ser	Nomenclature	A/U	Total Qty
179	Reduction forceps with point with soft lock, medium	No	20
180	Reduction forceps with point with soft lock, small	No	20
181	Retractor, knee, Blount, stainless steel	No	20
182	Fracture table unit complete with all accessories	No	01
183	Flat nose pliers large	No.	10
184	Flat nose pliers medium	No.	10
185	Flat nose pliers small	No.	10
186	Metzenbaum tissue cutting Scissor 18 cm	No.	10
187	Metzenbaum tissue cutting Scissor 20 cm	No.	10
188	Metzenbaum tissue cutting Scissor curved 18 cm	No.	10
189	Metzenbaum tissue cutting Scissor curved 20 cm	No.	10
190	Stile nibbler	No.	10
191	Stile nibbler CVD 23 cm	No.	10
192	Periosteal elevator small with straight edge 3mm	No	10
193	Heavy duty reusable emergency pneumatic splint for different limbs complete set of six in carrying case.	No	20
194	Bottle Hot Water, I.R. 30cm x 20 cm with two spare washers	No	50
195	Bottle Hot Water, I.R. 30 cm x 20 cm cover for	No	50
196	Bowl stainless steel, 10 cm	No	100
197	Bowl stainless steel, 25 cm	No	80
198	Bowl stainless steel, 35 cm	No	20
199	Electronic Thermometer	No	50
200	Jug measure plastic Graduated 1000ml	No	10
201	Jug Measure plastic Graduated 500ml	No	10
202	Pan Bed moulded single sheet SS slipper shaped medium size fixed with vertical handle	No	40

Ser	Nomenclature	A/U	Total Qty
203	Sheeting, waterproof thick 110 cm wide	Meters	50
204	Tray SS Deep, size 45cm X 30 cm	No	50
205	Tray SS Kidney shaped, 25 cm	No	100
206	Tray, SS, shallow, size 27.50 cm x 22.50 cm with cover	No	20
207	Urinal, SS, Male (For component see Appx)	No	50
208	Automated Electrolyte Analyser	No	08
209	Automated Haematology Analyser 5 parts differential	No	08
210	Blood sedimentation rate pipette, (Westergren) graduated from 0-200 mm in 1 mm divisions.	No	50
211	Blood sedimentation rate pipette stand to hold 6 pipettes (Westergren).	No	20
212	Blood sedimentation rate, pipette rubber buffers for (for use with PV 160041)	No	60
213	Centrifuge Universal 220-250 volts AC complete	No	07
214	Fully automated random access clinical chemistry analyser	No	08
215	Glucometer	No	40
216	Micropipettes, fixed volume (200-1000 micro litre)	No	20
217	Micropipettes, variable volume, 5 - 50 ul	No	10
218	Micropipettes, variable volume, 50 - 200 ul	No	10
219	Micropipettes, variable volume 1 - 200 ul	No	10
220	Microscope Binocular with built in illumination with dark ground condenser and 100 objective with Iris diaphragm extra	No	05
221	Portable Compact Mobile lab with semi automatic Analyser	No	08
222	Hand held portable ABG Analyzer (iSTAT)	No	5
223	Automated Urine analyser	No	3
224	Portable hand held Coagulometer (PT, INR)	No	3
225	Finochitto Retractor double blade adult	No	10
226	Forceps Artery Roberts curved on flat serrated jaws screw joint	No	10
227	Forceps Artery Spencer Wells	No	10
228	Scissor, lobectomy, curved on flat stainless steel 9 cm	No	10

Ser	Nomenclature	A/U	Total Qty
228	Sellors Rib Spreader/ approximator	No	10
229	Tudor edward retractor scapula	No	10
230	Bipolar coagulation forceps 16.5 cm straight dull	No	10
231	Bipolar coagulation forceps 20 cm straight sharp	No	10
232	Clamp Bulldog 54mm	No	20
233	Clamp bulldog 75mm	No	20
234	Clamp Vascular 9cm	No	20
235	Clamp Vascular aortic 12cm	No	20
236	Clamp vascular set of 4, 90 degree clamps styles 3	No	10
237	Clamp vascular Peripheral 21cm long, 15 degree angle atraumatic grip jaw 8.9cm 1x7 ratchets	No	20
238	Crile wood needle holder A-15	No	10
239	Crile wood needle holder C-20	No	10
240	Dissecting forceps fine 14cm	No	40
241	Dissecting forceps fine 18cm	No	40
242	Metzenbaum Scissors fine TC round 18cm craved	No	25
243	Metzenbaum Scissors fine TC round 28 cm craved	No	5
244	Mayo scissors Delta 17cm	No	5
245	Needle holder Titanium Ryder Tungsten carbide Inserts 19cm	No	5
246	Retractors Hand held Cushing Nerve or Vein Retractor 21.5cm length, blade 12mm wide	No	5
247	Vascular Tapes (Red)	No	5
248	Vascular Tapes (Blue)	No	5
249	Adsons dissection forceps with fine 1x2 teeth 4 *	No	10
250	Retractor London Hospital Pattern (LHP) solid blade 2.5 cm	No	10
251	Scissors iris curved on flat 11.5 mm	No	10
252	Vaccum assisted closure system	No	20
253	Craniotomy instrument set	Set	5
254	Elevator skull flap 17.7cm SS	No	5
255	Forceps Artery fine curved to side, box joint, 14.6cm SS	No	60
256	Forceps bone cutting screw joint 17.7cm SS	No	5
257	Forceps Brain Spatula	No	5
258	Forceps dissecting 6" long	No	5
259	Forceps dressing extra light 1 mm serrated points 20.32cm SS	No	5
260	Forceps Dressing serrated point 17.78cm SS	No	5

Ser	Nomenclature	A/U	Total Qty
261	Forceps Tissue teeth, 20.32cm SS	No	5
262	Hook sharp, dural 12.5cm	No	5
263	Scissors, dural, angular probe pointed under blade screw joint 14.6cm SS	No	5
264	Tube suction angled size 7Ch gauge	No	5
265	Tube suction angled 9 Ch gauge	No	5
266	suprapubic cystostomy kit	No	5
267	Syringe Infusion pump 220-240 V, 50/60 Hz, 20ml & 50ml with facilities for switch on, infusion rate purge, totaliser, stop alarm, alarm silence.	No	20
268	Volumetric Infusion Pump	No	20
269	Allis tissue grasping forceps,15 cm , 4x5	No	20
270	Anterior cervical plating system	No	5
271	Babcock intestinal and tissue grasping forceps tungsten carbide 16 cm	No	20
272	Deaver Retractor 25 mm length 32 cm	No	10
273	Deaver Retractor 35 mm length 32 cm	No	10
274	Deaver Retractor 50 mm length 32 cm	No	10
275	Deaver Retractor 75 mm length 32 cm	No	5
276	Duval Grasping Forceps 21 cm 14 mm	No	5
277	Duval Tissue Grasping Forceps 15 mm Tungsten Carbide length 20.5 cm	No	10
278	Kelly Retractor 75 x 90 mm length 25 cm	No	10
279	Proctoscope kelly medium 25x75 mm	No	10
280	Roberts Hemostatic Forceps Curved 22 cm	No	20
281	Roberts Hemostatic Forceps Straight 22 cm	No	20
282	Satinsky Vena Cava Clamp 5 x 13 mm length 25 cm	No	20
283	Toothed Tissue Forceps 2 x1 teeth 18 cm	No	5
284	Toothed Tissue Forceps 2 x1 teeth 20 cm	No	5
285	Apparatus X-Ray mobile, high frequency/ multipulse 100mA (10 KW) rotating anode at 125 KVP operating on 200v to 230 volts, 50 Hz single phase AC with wheels with Buckey and fixed grid on fixed table.	No	2

Ser	Nomenclature	A/U	Total Qty
286	Mobile C-Arm surgical Image Intensifier 9" (23 cm) with Digital image storage device for 4 images & last image hold, HF Generator, 50-90 KV/3mA for Fluoroscopy and 45-90 KV/30 mA for Radiography	No	01
287	64 Slice CT Scan Machine	No	1
288	Apron lead Vinyl rubber with heavy duty nylon reinforced seams and padded shoulder, minimum 0.5 mm lead equivalent.	No	16
289	X-Ray film Illuminator Slim with LED light source, Single Panel for film size 35 x 43 cm in the panel, 220 V, 50 Hz AC Single Phase.	No	3
290	Computerised Radiographic system with accessories (single load CR)	No	3
292	Semi-automated Immunoheamatology station by Column agglutination Technology (CAT)	No	08
293	Biomixer for Blood Collection	No	2
294	Blood Storage Cabinet of 50 Blood Bags /100 Blood Bags (Compact model)	No	2
295	Portable deep freezer (100 L)	No	08
296	Blood Transportation Box – Active, Capacity of 25 Blood bags	No	5
297	Outfit blood grouping complete	Set	5
298	Plasma Thawing system	No	2
299	Stand Transfusion Metal for bed hospital	No	25
300	Illuminated view box for blood bank serology	No	7
301	Di-Electric Tube Sealer (Table top)	No	2
302	Apparatus short wave Diathermy Therapeutic (27.12 Mega cycles or 11.05 meters) valve type complete HF output 400 watts 230 volts 50 cycles AC.	No	01
303	Lamp operating shadowless, with halogen light 230 V AC/DC cum 12 volts battery	No	10
304	Lamp operating halogen bulb for	No	10
305	Portable Light weight computerised Multi channel ECG machine with capability of acquiring all the 12 leads simultaneously, printing on A4 size thermal paper with auto measurement parameters complete.	No	5
306	Mobile OT Light	No	10

Ser	Nomenclature	A/U	Total Qty
307	Emergency kit Medical Officer	No	10
308	Emergency kit paramedical staff	No	10
309	Lanolium Floor covering washable roll	Mtr	30
310	Pneumatic Splint set	No	20
311	Scoop Stretcher	No	15
312	Splint Knee Thomas 60 cm	No	15
313	Hemoglobinometer (Hemocue)	No	10
314	Hand held Doppler	No	4
315	Portable USG machine with 3 probes (linear/ curvilinear/cardiac)	No	4
316	Martin's Pinless external fixator	No	10
317	Pulse Lavage System	No	30
318	Microwave	No	02
319	Biomedical waste treatment system with Shredding & Sterilization facility	No	02
320	Autoclave (portable) front loading table type sterilising temp 121 CAT 1.2 kg/cm pressure with safety device and standard accessories.	No	2
Total Cost			

Annexure 2 to Appendix 'A'

DENTAL ME SCALE FOR 250-BED HOSPITAL SHIP

Ser	Nomenclature	A/U	Total Qty
1	Airway guedel, all rubber/PVC, all sizes (Infant, Paediatric & Adult)	No	1
2	Cylinder Oxygen (O2) coir cover for	No	1
3	Cylinder Oxygen Bull nose fitting fine Adjustment valve with pressure gauge and Bobbin flow meter with double walled tube	No	1
4	Cylinder Oxygen Key spanner for	No	1
5	Cylinder Oxygen stand (to hold 623 ltr cylinder) for	No	1
6	Expiratory valve	No	1
7	Respirator intermittent positive pressure manual bellows inflating bag complete	No	1
8	Resuscitation tube (For mouth to airway resuscitation) Plastic	No	1
9	Steriliser steam portable high pressure drum for 225 x 225mm deep	No	2
10	Steriliser steam high pressure drum shallow for size 275mm x 125mm	No	2
11	Wolf Bottle Complete (For Oxygen therapy)	No	1
12	Aspiration unit, double bottle portable 220/230V, AC 50 Hz complete with tube suction and pressure tubing, two bottles of 1 ltr capacity suction and pressure regulators, vacuum gauge, electric motor 1/4 HP, pressure purifier and automatic oiler	No	1
13	Aspiration Unit, Double Bottle Vaculyser, Jar Glass 2 Litres, Spare for	No	2
14	Forceps, Artery curved on flat, 14.5cm	No	2
15	Forceps, Artery straight 14cm	No	2
16	Forceps, Artery mosquito, curved on flat, 12.5cm box joint, stainless steel	No	2
17	Forceps, Artery, straight box joint 13cm	No	2
18	Forceps, dissecting, serrated (Fig. 1) 13cm	No	2

Ser	Nomenclature	A/U	Total Qty
19	Forceps, dissecting,toothed, 12.5 cm	No	2
20	Forceps, steriliser (Cheatle)	No	3
21	Forceps, towel holding	No	8
22	Knife Bard parker, handle size 1 fitting (Commercial No. 3) for use with commercial blade No 10,11,12, and 15	No	4
23	Needle holder, 19 cm box joint	No	2
24	Scissor, dressing st, both points sharp 12.5 cm	No	3
25	Digital Sphygmomanometer	No	1
26	Torch,hand chromium plated, brass standard cells fitted with a bulb of 6.2V without cell	No	2
27	Autoclave, front loading table type sterilising temp 121 CAT 1.2 kg/cm pressure with safety device and standard accessories.	No	1
28	Bowl rubber for plaster, large	No	2
29	Brush bur, hand wire brass fig 3	No	2
30	Divider, 15.9cm	No	2
31	Excavator double ended No 73/74	No	2
32	Excavator double ended No 125/126	No	2
33	Excavator, double ended, No 129/130	No	2
34	Excavator, double ended, No 155/156	No	2
35	Excavator, double ended, No 212/213	No	2
36	File half round 12.7cm bastard	No	2
37	Glass (Dappens) medicament assorted colours	No	3
38	Holder cotton wool fig 1 height 4.5cm dia 5cm	No	3
39	Knife plaster fig 2	No	2
40	Knife wax large fig 1 (Fahanstocks)	No	2
41	Mirror mouth plain glass fig 5	No	20
42	Mirror mouth plain glass fig 5 top for	No	30
43	Portable mobile dental unit complete with details enlisted as PVMS-10017501-05	No	1
44	Explorer dental double ended	No	3
45	Probe double ended (Nabers) Left and right	No	4
46	Receiver waste small dental SS	No	3
47	Sanitary waste receptacle with stainless steel body	No	3

Ser	Nomenclature	A/U	Total Qty
48	Slab glass mixing fig 1 size 15.2cm x 7.6cm x 2.2cm	No	2
49	Spatula steel (weston's) double ended , 16.5cm	No	3
50	Spatula steel cement double ended16.5cm	No	3
51	Spatula blunt for plaster and alginate mixing	No	3
52	Tweezers College	No	8
53	Self retaining cheek retractor plastic (Set of 2)	No	2
54	Occlusal Plane guide (Fox pattern)	No	2
55	Hand Held battery operated DC Dental X Ray unit	No	1
56	Instruments for Rubber Dam technique enlisted on PVMS 10022201-04	Kit	2
57	Water Distiller	No	2
58	X Ray Film Holding instrument for long & short cone and bite wing technique Rinn type	Set	1
59	Articulator hinge type metal	No	2
60	Articulator free plane improved model, with graduated (1mm scale) setting rod and extended hinge pins	No	2
61	Wax Carver and spatula,	No	2
62	Mandrel and polishing, tip holders set of 3, cylinderical tapering and screw head.	Set	2
63	Pliers , plate North croft no 25	No	2
64	Pliers pin roughening and bending fig 127	No	2
65	Scissors, crown and collar (Beebee's) curved	No	2
66	Gauge caliper for metal	No	2
67	Chisel, bone hand small (Sterling V Mead)	No	2
68	Curette bone,Lucas double ended small	No	2
69	Curette bone,Lucas double ended medium	No	2
70	Curette bone,Lucas double ended large	No	2
71	Elevator periosteal medium (Sterling V Mead)	No	9
72	Elevator Periosteal (Molt)	No	4
73	Elevator (Coleman's)	No	2
74	Elevator Root (Hospital pattern) Fig 22 (Left and Right)	No	2

Ser	Nomenclature	A/U	Total Qty
75	Elevator Root Lindolevien small	No	2
76	Elevator Root Apical (left)	No	2
77	Elevator Root Apical (Right)	No	2
78	Physiodispenser with implant placement features	No	2
79	File Alveolectomy double ended SS	No	2
80	Forceps extracting tooth stainless steel for upper Incisors, Cuspids & small Molars	No	4
81	Forceps Tooth No 29	No	4
82	Microsurgical forceps tissue holding straight for periodontal surgery	No	4
83	Forceps Tooth No 41	No	2
84	Forceps, Tooth, No 44	No	2
85	Forceps, Tooth, No 67	No	2
86	Forceps, Tooth, No 73	No	2
87	Forceps, Tooth, No 74N	No	2
88	Forceps extracting Tooth No 7SS(for upper small molars)	No	2
89	Forceps, Tooth No 76N (Read's pattern)	No	2
90	Forceps, Tooth, No 79	No	2
91	Forceps, Tooth No 91 (Rowney's pattern)	No	2
92	Forceps, extracting, Tooth No 17 Stainless Steel (for right upper large molars)	No	2
93	Forceps Extracting ,Tooth, No 18, Stainless steel (for left upper large molars)	No	2
94	Forceps, Tooth 112 (Martin's pattern)	No	2
95	Forceps, Rongeur, Stainless steel No 1	No	2
96	Forceps, Rongeur, Stainless steel No 3	No	2
97	Forceps, Tooth, children pattern Fig 37	No	3
98	Forceps, Tooth children pattern Fig 38	No	2
99	Forceps, Tooth children pattern Fig 39	No	2
100	Forceps, Tooth children pattern Fig 40	No	2
101	Gag, mouth all metal (Fergusson) Fig 3	No	2
102	Hammer, small 225g head	No	2

Ser	Nomenclature	A/U	Total Qty
103	Nippers cutting bevelled(Fig 47)	No	2
104	Props, mouth, Mushin metal/rubber set of 4	Set	2
105	Steriliser steam drum large for	No	5
106	Steriliser, steam drum small for	No	5
107	Syringe Hypodermic cartridge type	No	4
108	Heavy wire cutter upto 1.2mm hard wire	No	1
109	Plier Young's universal type	No	1
110	Chiesal Ochsenbein, set of 4 consisting of 001,002,003,004	Set	1
111	Curettes,Gracey set of 7, consisting of SG 1/2,SG3/4,SG 5/6,SG 7/8,SG9/10/SG 11/12,SG 13/14	Set	1
112	Elevator Periosteal, Mead	No	1
113	Elevator Periosteal, Bennett	No	1
114	Forceps Tissue Alison Baby 4x5, 12.5 cm	No	2
115	Forceps Tissue Alison straight 5x6,15 cm	No	2
116	Haemostat-Mosquito 1x2 straight 12 cm	No	2
117	Holders Needle - Castroviejo straight 14 cm	No	2
118	Component of PV 100728 Knife Gingivectomy BLAKE with component enlisted as PVMS-10072801-72803	No	1
119	Nipper Bone/Tissue 12.5 cm	No	1
120	Nipper Bone/soft tissue Goldman Fox,10 cm	No	1
121	Plier Dressing Perry	No	1
122	Plier Tissue 15 cm, TP16	No	1
123	Probe, Periodontal pocket double ended Williams	No	1
124	Retractors Tissue Periodontal, Kirkland set of 4 consisting of 23K,24K,27K,28K	No	1
125	Scaler sickle shaped Darby Parry Fig 12	No	4
126	Scaler, Tungsten Carbide, No 212	No	2
127	Scaler balanced grip Cushings Fig 62	No	4
128	Scaler, single ended Fig 66 (Howes)	No	4
129	Scaler, single ended Fig 67 (Howes)	No	4
130	Scaler, Tungsten carbide, No 213	No	4
131	Scaler, Tungsten, carbide No 211	No	4

Ser	Nomenclature	A/U	Total Qty
132	Scaler Balanced grip Jacquetts Fig 2	No	4
133	Scissors surgical curved Fig 19	No	4
134	Scaler balanced grip Jacquettes fig 3	No	4
135	Crown and Bridge remover kit, sterilizable, SS with four removable hooks and single double wire loops/tips.	Kit	1
136	Apex Locator	No	1
137	Cordless endodontic Hand piece	No	1
138	Instruments, hand, dental, root canal treatment, set of 6 headstroem file size 15-40,45-80,21 mm length	No	2
139	Instrument plastic double ended, contoured blade	No	2
140	Instrument, plastic filling, double ended, 10mm blade	No	2
141	Instrument plastic filling 1	No	2
142	"Instrument plastic filling double ended , for packing	No	2
143	"Instrument plastic filling, double ended, (Wallis)	No	2
144	"Instrument plastic filling double ended condenser (Edward)	No	2
145	Instrument plastic filling double ended elliptical cross section	No	2
146	Intrument Filling surface treated for reduced stickiness - Set of 6	Set	2
147	Light cure Unit LED cordless with curing light output for fast curing range of 1200 – 1400 Nw/Cm2.	Unit	1
148	Matrix retainer SS (Ivory pattern) complete	No	2
149	Outfit, Matrix retainer SS (Siqveland),	No	2
150	Sterilizer glass bead	No	1
151	Box SS autoclavable with perforated stand for 50 to 60 endodontic hand rotary instruments	No	1
152	Ultraviolet Cabinet	No	2
153	Exodontia kit	No	1
154	Bowl stainless steel, 10 cm	No	5
155	Bowl stainless steel, 25 cm	No	5
156	Jug measure plastic Graduated 1000ml	No	4
157	Tray SS Kidney shaped, 25 cm	No	4

Ser	Nomenclature	A/U	Total Qty
158	Tray, SS shallow, size 35 cm x 30 cm with cover	No	4
159	Hand piece Straight GD-450	No	2
160	Hand piece Angled 1:1, 135mm	No	2
161	Hand piece 20:1 Angled 90mm	No	2
162	Hand piece contra angled GD-465	No	2
163	Hand piece straight, spray nozzle for	No	1
164	Hand piece contra angled spray nozzle for	No	1
165	Harvey wire cutting scissors 13 cm	No	1
166	Bottle clear round narrow mouth stoppered 25 ml	No	4
167	Apron lead Vinyl rubber with heavy duty nylon reinforced seams and padded shoulder, minimum 0.5 mm lead equivalent.	No	1
168	Hanger developing dental	No	1
169	Mat rubber, shock protective 91.5 cm X 91.5 cm	No	1
170	Sheet lead rubber, 91.5 cm X 61 cm	Sheet	1
171	Fumigation cum Air Purification system	No	1

Annexure 3 to Appendix 'A'

LIST OF ADDITIONAL MEDICAL EQUIPMENTS

SER	ITEM	A/U	QTY
EQUIPMENT LIST GENERAL WARD			
1	High Low SS bed with accessories	No	14
2	Pipeline Oxygen supply with delivery hose and pin index fitted on wall	Set	As reqd
3	Crash Cart Trolley	No	1
4	Patient Warmer	No	2
5	Injection cupboard	No	2
EQUIPMENT LIST ICU			
1	High Low SS bed with accessories	No	12
2	Portable lamp operating shadow less with LED bulb	No	1
3	Pipeline Oxygen supply with delivery hose and pin index fitted on wall	Set	As reqd
4	Crash Cart Trolley	No	2
5	Stand Transfusion Metal for bed hospital	No	24
6	Patient Warmer	No	2
7	Injection cupboard	No	2
EQUIPMENT LIST BURN WARD			
1	High Low SS bed with accessories	No	8
2	Portable lamp operating shadow less with LED bulb	No	1
3	Pipeline Oxygen supply with delivery hose and pin index fitted on wall	Set	As reqd
4	Crash Cart Trolley	No	2
5	Stand Transfusion Metal for bed hospital	No	16
6	Patient Warmer	No	2
7	Injection cupboard	No	2
EQUIPMENT LIST ISOLATION WARD			
1	Patient bed double bunk	No	6
2	Patient Cupboard	No	8
3	Equipment cuboard	No	1
4	Stand Transfusion metal for bed hospital	No	3
EQUIPMENT LIST HDO			
1	High Low SS bed with accessories	No	14

2	Portable lamp operating shadow less with LED bulb	No	1
3	Pipeline Oxygen supply with delivery hose and pin index fitted on wall	Set	As reqd
4	Crash Cart Trolley	No	1
5	Stand Transfusion Metal for bed hospital	No	10
6	Patient Warmer	No	2
7	Injection cupboard	No	2
ADDITIONAL EQUIPMENTS FOR WARDS			
1	Hegar dilators set	SET	4
2	TAH Set	NO	1
3	VH Set	No	1
4	Hysterscope set	NO	2
5	Sim speculum single blades	NO	10
6	Sim speculum double blades	NO	10
7	Vulsellum	NO	10
8	PAP smear kit	NO	4
9	Tuning Fork 256	NO	2
10	Tuning Fork 512	NO	2
11	Ambulatory B P apparatus	No	1
12	Holter Monitoring System	No	1
13	TMT Machine	No	1
14	ECHO	No	1
15	PFT Machine	No	1
16	Pipelle	No	50
17	Manual Vaccum aspirator	No	5
EQUIPMENT LIST FOR LABOUR ROOM			
ANTE NATAL ROOM			
1	Gynae Examination table SS	NO	2
2	Foetal Doppler	NO	4
3	Portable, mobile LED Examination Light	NO	1
4	Wheel chair	NO	2
5	USG with Doppler Machine	NO	1
6	Cardiotocography Machine	NO	3
LABOUR ROOM			
1	Portable, mobile LED Examination Light	NO	2
2	Scrubbing station	NO	1
3	Identification Disc	SET	1
4	Obstetric Bed	NO	2

5	Table top steriliser for instruments , Electrically operated	NO	1
6	Neonatal Warmer	NO	3
7	Neonatal resuscitation kit including Neonatal Ambu Bag	NO	2
8	Weighing scale for new born & adults	NO	2
9	Neonatal Suction Apparatus	NO	3
10	Neonatal Reception Kit including sterile cord clamps, sterile linen, Dog tags	NO	1
11	Crash Cart Trolley	No	2
12	Stand Transfusion Metal for bed hospital	No	4
POST NATAL ROOM			
1	Gynae Examination table SS	NO	1
2	Scrubbing station	NO	1
3	Foetal Doppler	NO	1
4	Neonatal ambu bag	NO	2
5	Suction Apparatus-neonatal	NO	2
6	Mobile LED Examination Light	NO	2
7	Phototherapy unit	NO	2
8	Thermometer digital	NO	2
9	Radiant Warmer	NO	2
10	Wheel chair	NO	2
CSSD			
1	Ultrasonic Cleanser	No	1
2	Automated Washer Disinfector	No	1
3	Thermal Drying Cabinet	No	1
PHYSIOTHERAPY			
1	Advanced Electrotherapy and Electrodiagnostic Unit capable of giving 16 different currents including interferential, TENS and low frequency with LCD screen and pulsed vaccum unit and all standard accessories operable on 220 AC, 50 Hz	No	2
2	Apparatus Ultrasonic Therapy Unit complete / Ultrasound Physiotherapy Machine	No	2
3	Apparatus Ultrasonic Therapy Unit complete, maximum outfput 21 Watts pulsed & 15 Watts continuous, Ultrasonic Frequency 1 MHz with Digital output Display 230 Volts 50 cycles AC	No	1
AERO MEDICAL EQUIPMENTS			

1	Stretcher Trolley	NO	2
2	Crash Cart Trolley	No	1
3	Air Borne Stretcher	No	4
4	Medevac Litter	No	4
5	Patient Transfer Unit *	No	2
6	Oxygen Cylinder	No	6

* The PTU is required to have the following specifications:-

(i) Must be light weight and compact

(ii) Must have an integral power source and not be dependent on an external power source

Oxygen Cylinder. 06 in number Air Worthy Certified portable Oxygen Cylinders may be included in the list of equipment for Aeromedical Evacuation of patients to and from the ship

Annexure 4 to Appendix 'A'
(Refers to Para 128 of Appendix A)

PROJECT MONITORING FACILITIES

1. The PMS shall be established and managed on a turn-key basis. The seller shall setup PMS facility within one month of signing of contract and submit a milestone schedule and PERT/CPM chart for the construction of the vessels, which shall form the basis for monitoring and reviewing the progress of work. This shall include the following : -

(a) **PMO Setup**. Setting up of the Project Management Office (PMO) at IHQ MoD(N) / DND, WOT and Seller. The PMO set up at IHQ, WOT and Seller should be interconnected using a dedicated leased line and has to be capable of online web based project monitoring, tracking drawing approvals and maintaining online record of all approved drawings including soft copies of approved drawings, provide online alerts on pending approvals, record and retrieval of correspondence/ clarifications both at IHQ and WOT, generating status reports by Project Manager to assess the actual status of work, monitor project cost including record and tracking of payments made and projected quarter wise cash outflow for the project duration, undertake project analysis, trouble-shooting etc through a dedicated line for data voice and video conferencing. Entire correspondence shall be uploaded on the Project Management Software (PMS) for easy tracking and retrieval.

(b) **Operational Support**. The support to the Project Monitoring Facilities will be provided on a Turn Key Basis (Infrastructure, Software, Man Power, Consumables, etc.) and hiring of Technical services.

(c) **Infrastructure**. Supply and commissioning of the required software and hard-ware for Project monitoring, Video Conferencing, Document management, Data Exchange, online Real time Monitoring etc.

(d) **Connectivity**. Providing dedicated on-line connectivity for data, voice and video.

(e) **Software**. Enterprise Project Monitoring using Commercial off the Shelf (COTS) enterprise software tools.

(f) **Training.** Providing structured as well as on job training to the PM Staff and four other users (two each from IHQ and WOT).

(g) **Maintenance and administration of the PMS**. Providing turn-key maintenance support and system administration for the entire project duration. The daily progress of work is to be uploaded on the PMS so as to have real time information about the progress of work.

(h) **Stationery**. Provision is to be made for effective functioning of the PMO during the duration of the Project with respect to provision of adequate stationary, duplication facilities and Office Tools etc. for Project Management.

(j) **Interfacing.** Seller is to designate one Project Manager for the project who shall be responsible for providing information about daily progress of work, documentation, project cost, planned work schedules, deviations from PERT to the Project Monitoring Office on a daily basis. The PMS should be interfaced with the Yard ERP to have easy information flow.

(k) **Manpower**. Manpower comprising of two Project Managers, one at IHQ and one at WOT having more than 05 years of experience in Project Management and usage of project management software, six Project Assistants (minimum qualification – B-Tech), three each at IHQ MoD(N) & WOT, having knowledge of usage of project management software and three QA inspectors at WOT having experience of atleast 3 years are to be deployed. Three MTS, two at IHQ and one at WOT, are to be deployed for effective functioning of the PMO. The Seller is to ensure that the Manpower for the PMS is positioned within 15 days of signing of Contract.

(l) **Transport**. 02 AC cars (minimum capacity > 90 bhp) with driver to be provisioned at IHQ for facilitating smooth PM activities.

(m) All facilities for functioning and subsistence of the WOT/ other Owner's representatives positioned at the BUILDER'S premises, which includes, furnishing & its maintenance, stationary, communication, electricity, conservancy, transport, tools/equipment for inspections, computers and associated accessories, software, and other requirements shall be provided by the BUILDER. Building rent will not be paid, if the construction of the building is financed by the OWNER. Transport facility at IHQ MoD (N) / DND for transit of document / staff for smooth functioning of Project.

(n) Expenses related to meetings with Suppliers/ OEMs by the OWNER at Delhi for Contracts contracted by BUILDER.

(p) Cost incurred for facilities like accommodation, boarding, lodging, telephone, transport etc. agreed in the PNC with the participation of the OWNER and included order with suppliers.

(q) Hire/ Lease / Energy charges and consumable charges including fuel for providing shore power for the ship from external DA sets during the period of berthing in the yard. Cost of power supply for the ship from shore is not costed in the contract.

(r) Accommodation and transport facilities for the crew from the date of positioning till delivery of the vessel will have to be provided by the yard.

(s) Any other work required for the Project, not covered under any other description above, that shall be mutually agreed between the OWNER and BUILDER.

2. The details of the envisaged PMS is as follows**:-**

(a) The PMS should be designed in such a way to facilitate real time project monitoring in its entirety by the Seller, WOT and IHQ MoD (N)/ DND. It also should ensure real time transfer of drawings, correspondences and all documents pertaining to the project and interaction between Seller, WOT and IHQ MoD (N)/ DND.

3. **Facilities for Overseeing Team**. Necessary furnished air conditioned office space with associated office support arrangements, two phone lines with STD and one AC car and One minibus (at least 14 seater) shall be provided for transport to the overseer and representative of the owner. In addition office space and transport for the ship's crew shall also be provided.

4. **Contractual stipulations**. Following are the major contractual stipulations.

(a) The vendor should familiarize themselves with the site requirements prior submission of the bid.

(b) The vendor should submit per unit rate of each item which should be valid for a period of at least five years and at any place in India.

(c) The duration of the project is till delivery of the ship, with 1 year warranty.

(d) Once the system is installed no data / customization can be taken out of the Buyer's premises.

(e) The payment towards networking shall be made on actual basis. The concerned office (DND/ WOT) shall issue the quantity certificate.