# STAFF REQUIREMENT FOR 01 X DEEP DIVING AND SALVAGE SHIP TO BE BUILT/ PROCURED FOR BANGLADESH NAVY

## SECTION I - GENERAL

| Ser | Description | Remarks |
|---|---|---|
| 1. | Roles | (a) To act as general service ocean rescue and salvage ship<br>(b) To carry out rescue, salvage and evacuation operation for distressed submarine (DISSUB).<br>(c) To provide Emergency Life Support System (ELSS) to the submarine.<br>(d) To conduct depressurization and ventilation of DISSUB.<br>(e) Towing of disable ships, submarine and other water crafts.<br>(f) To carryout Diving and Salvage operation in port channel, harbour entrance, outer anchorage and at sea.<br>(g) Recovery of submerged objects including torpedoes etc.<br>(h) Heavy Lift.<br>(j) Off-ship fire fighting.<br>(k) To conduct search and rescue at sea.<br>(l) To carryout humanitarian assistance and disaster relief.<br>(m) To act as hospital ship in emergency. |
| 2. | General Remarks | (a) Should be capable of operating in tropical conditions.<br>(b) Have an expected life of at least 30 years.<br>(c) Annual usage of approximately 2,500 hours.<br>(d) Normal refit interval of once in 3 years.<br>(e) Operating and personnel cost should be kept to a minimum. |
| 3. | Length Overall | 80 m ± 5 m |
| 4. | Breath | 15 m ± 2 m |
| 5. | Draught | Not to exceed 5 meters including u/w projection. |
| 6. | Displacement | Max 3500 tones. |
| 7. | Speed | (a) Maximum: Not less than 18 Knots.<br>(b) Maximum continuous: Not less than 16 Knots.<br>(c) Economic speed: 14 Knots. |
| 8. | Endurance | At least 4,000 NM at economic speed. |
| 9. | Propulsion | (a) Diesel engines.<br>(b) Number of shafts: Two. |
| 10. | Seaworthiness | (a) Capable of effectively operating up to sea state 6.<br>(b) Seaworthy up to sea state 9. |

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| 11. | Complement | (a) Officers: Approx 10.<br>(b) Senior Sailors: Approx 15.<br>(c) Others: Approx 40.<br>(d) Under Trainees Approx 30. |
| 12. | Construction | Welded steel grade A or equivalent for both hull and super structure etc. |
| 13. | Special Features | The ship should have arrangements of:<br>(a) Around 20,000/00 cuft salvage hold.<br>(b) Salvage and machine shop.<br>(c) Retraction facilities consisting of beach gears, anchor, wire rope, chain & salvage buoy.<br>(d) Two diving stages with powered davit.<br>(e) 10 & 40 tons capacity booms on fwd & aft respectively<br>(f) Heavy lift system consisting of large bow & astern roller, deck machinery and tackle.<br>(g) Helicopter Landing Arrangement: Medium helicopter (up to 10 tons) day & night landing facility.<br>(h) Helicopter Deck size: 57' X 35' (Appx).<br>(j) Off-ship fire fighting system to be located fwd, aft and centre capable of delivering 1000 galloon sea water/AFFF per min. |

**SECTION II – HULL AND STRUCTURE**

| Ser | Description | Remarks |
|---|---|---|
| 1. | Construction | The hull is to be of High Yield Strength Low Alloy Steel (HYSLA Steel) and all welded steel construction. The structural design and details of construction are such to avoid unacceptable noise and vibration. |
| 2. | Superstructure | Superstructure is to be constructed by HYSLA Steel. The side structure is to be placed well in board to prevent damage when coming alongside and to provide ample gangway. |
| 3. | Construction Standard | Lloyds, Beauro Varitus or equivalent. |
| 4. | Shock | Shock standard should fulfill the cumulative impact of retraction, towing, weapons and weather. |
| 5. | Noise | (a) Engines and the auxiliary machinery compartments to be covered by standard sound insulation material.<br>(b) Resilient mountings and flexible connections to minimize structure |

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| | | borne noise.<br>© Acoustic noise to be kept to minimum as per war ship standard. |
| 6. | Cabins as per Complement | (a) Captain's Cabin With Lounge with Attached Bathroom and Toilet facilities.<br>(b) EXO's Cabin with attached Bathroom and Toilet Facilities.<br>© Cabin for Officers with attached Bath Room and Toilet Facilities adjacent to the cabin as designed.<br>(d) Accommodation/Mess For Senior Sailors with separate Bath Room And Toilet facilities adjacent to the mess.<br>(e) Mess for Junior sailors with separate bath room and toilet facilities adjacent to the mess. |
| 7. | Accommodation for Trainees | Accommodation with separate bathroom and toilet facilities in suitable location. |
| 8. | Messing Arrangements | (a) Wardroom for officers with recreational facilities.<br>(b) Separate dining hall with recreation room for senior and junior sailors respectively with recreational facilities. |
| 9. | Misc Compartments | Chamber Room, Salvage and Machine Shop, Equipment Room, Machinery Control Rooms, Offices, Stores, Workshops, Damage Control Stations, Galley and Pantry facilities for officers and sailors. |

**SECTION III – ENGINEERING AND CONTROL SYSTEM**

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|---|---|---|
| 1. | Propulsion | (a) 4 x Diesel engine.<br>(b) 2 x Propeller shaft with accessories.<br>(c) 2 x Gear Box.<br>(d) 2 x CPP system.<br>(e) 3 x Control position (including 2 X remote). |
| 2. | Steering System | Electro hydraulic system with alternate arrangement and auto pilot. |
| 3. | Auxiliary System | (a) Fresh and sea water system.<br>(b) Air conditioning system.<br>© Refrigeration system.<br>(d) Fresh water generation plant (RO plant).<br>(e) Sewage treatment system.<br>(f) Waste disposal system.<br>(g) Fire fighting and damage control system/ arrangement including sufficient gears. |

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| 2. | Single man Portable Decompression Chamber | 02 in number |
| 3. | Remotely Operated Vehicle (ROV) | 01 in number ROV. Operating depth up to 1000m. (Optional) |
| 4. | Sonar | (a) Portable Side Scan Sonar<br>(b) Dipping Sonar with Visual Image Monitoring system. (Optional)<br>(c) Underwater Communication System. |
| 5. | Multi Beam Echo Sounder | 01 in number |
| 6. | Underwater Camera | Underwater camera with video monitoring system. |
| 7. | Sonobuoy | 05 in number |
| 8. | Deep Diving Arrangements/ Equipment | 16 X SCUBA Diving sets<br>01 fixed and 03 portable HP diesel air compressors<br>SSDS helmet with 60 m long air supply pipe.<br>SSDS helmet with 100 m long air supply pipe.<br>Special diving suit for deep diving.<br>Diver's portable TV camera with on board monitoring system. |
| 9. | Underwater Welding and Cutting System | Adequate transportable cutting & welding equipment, hydraulic & electric power source and de-watering gears. |
| 10. | Air Supply/Exhaust Arrangements | Arrangement to supply HP air to DISSUB (Compressor and Submarine Emergency Ventilation and Decompression System (SEVDS). |
| 11. | Electricity Supply to DISSUB | Arrangement to supply emergency electricity to DISSUB |
| 12. | Emergency Life Support System to DISSUB | ELSS Pod posting system to supply emergency food, Oxygen candles etc. |
| 13. | Life Saving Appliances | 08 X 25 men life raft, 16 X life buoy, 100 X hazardous duty life jacket, 150X general service life jacket, 20X 02 men capacity air throwing life buoy. |

Note: Equipments mentioned in ser no 3, 9 and 12 are to be modular in nature and shiftable when the purpose built ship is under refit/docking/non-operational.

**SECTION VII - NAVIGATIONAL AND DIRECTION**

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|---|---|---|
| 1. | Navigation and Radar Equipment | (a) 1 x Integrated Navigation System.<br>(b) 1 x Navigation Radar.<br>(c) 1 x Tactical Air Navigation System.<br>(d) 1 x Helicopter Control Radar.<br>(e) Electronic Chart Display Information System (ECDIS). |

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| | | (f) 2 x Gyro Compass.<br>(g) 2 x Echo Sounder.<br>(h) 1 x Speed Log.<br>(j) 1 x Magnetic Compass.<br>(k) 2 x GPS.<br>(l) 1 x Anemometer.<br>(m) Fog Horn/Siren.<br>(n) 1 x AIS.<br>(p) 1 x Auto Pilot.<br>(q) 1 x Current Meter. |
| **SECTION VIII- WEAPONS** | | |
| 1. | Weapons | (a) 2 x 20 mm Oerliken Gun.<br>(b) 7.62 mm/5.56 mm Small Arms. |
| **SECTION IX- COMMUNICATION** | | |
| 1. | Wireless | Integrated Communication System(ICS) with following:<br>(a) 3 x HF Tx/Rx (100W) interfaced with data communication facility.<br>(b) 1 x HF Tx/Rx (500W) with data communication facility.<br>(c) 2 x Data message terminal for HF comm.<br>(d) 2 x VHF/UHF Tx/Rx (50W) capable to be interfaced with ICS.<br>(e) 2 x Air band VHF Tx/Rx (50W).<br>(f) 2 x IMO standard marine type VHF set.<br>(g) 1 x GMDSS.<br>(h) 15 x VHF walkie talkie sets.<br>(j) Standard visual signaling light and flag signaling facilities. |
| 2. | Internal Communication | Standard integrated Internal Communication System (ICS) with Broadcast and Intercom. |
| **SECTION- X- LOGISTICS** | | |
| 1. | Fuel/Fuelling | (a) Fuel oil tank space for ship's stated endurance.<br>(b) Lub oil and lubricants tank space for ship's stated endurance.<br>(c) Fuel tank/space for ship's boat.<br>(d) Fuelling point and arrangement to conduct RASF at sea. |
| 2. | Store Rooms | (a) 1 x Dry provision store room for 100 personnel for at least 30 days. |

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| | | (f) 2 x Gyro Compass.<br>(g) 2 x Echo Sounder.<br>(h) 1 x Speed Log.<br>(j) 1 x Magnetic Compass.<br>(k) 2 x GPS.<br>(l) 1 x Anemometer.<br>(m) Fog Horn/Siren.<br>(n) 1 x AIS.<br>(p) 1 x Auto Pilot.<br>(q) 1 x Current Meter. |
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| | | (b) 1 x Cool Room (tinned and vegetable provision) for 100 personnel for at least 10 days.<br>(c) 1 x Cold room (fresh provision) for 100 personnel for at least 15 days.<br>(d) 3 x Naval stores room (mechanical spares, electrical & electronic spares and general stores) for ship's independent operation as per endurance.<br>(d) 1 x Clothing stores room for storing all kind of public, personal and necessary clothing items for 100 personnel. |
| 3. | Galley and Pantry | (a) 1 x Ward Room galley (for officers) and 1x Ships Galley.<br>(b) 3 x Pantry space (1 x Captain's Pantry, 1x Ward Room Pantry, and 1 x JCOs' and POs' Pantry) with crockery & cutlery storing. |
| 4. | Ammunition Stores | As required for the armament specified following the rules of NMER. |
| 5. | Offices, Laundry, Recreation and Canteen Space | (a) Required number of office spaces for ship's office, store office, gunnery office, regulating office etc.<br>(b) 2 x Laundry Room.<br>(c) 1 x Gymnasium.<br>(d) 1 x Dining/ Recreation Hall for ship's company.<br>(f) 1 x Ship's Canteen. |
| 6. | Medical | (a) 1 x Sickbay with 04 ICU bed and minor surgery facilities.<br>(b) 1 x Medical/Dispensary Store (Adjacent to Sickbay).<br>(c) Standard equipment for CASEVAC. |
| 7. | Water Tank | (a) Adequate water tanks for 100 personnel for 10 days.<br>(b) Domestic fresh water tanks and pumps to supply water in the galley and toilets.<br>(c) Domestic sea water tanks for toilets.<br>(d) Provision for generating fresh water. |

**SECTION XI - MISCELLANEOUS**

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|---|---|---|
| 1. | Life Saving Equipment | As per complements with SOLAS standard. |
| 2. | Fire Detection Equipment | Fire and smoke detectors with alarms in important compartments. |
| 4. | NBC Protection System | Equipped with nuclear, biological and chemical sensors, alarms and spaces. |
| 5. | Helicopter Deck | Medium helicopter (up to 10 ton) day and night landing facility. |
| 6. | Sensors | Necessary sensors for running Machinery and important compartment with monitoring systems. |

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