



Khulna Shipyard Limited (KSY)
Bangladesh Navy (BN), Khulna-9201
Phone: 02-44110987, 02-477720003
Fax: 02-477720404
E-mail: contact@khulnashipyard.gov.bd
plans@khulnashipyard.com

Project-723/868

24 October 2024

INVITATION FOR EXPRESSION OF INTEREST (EOI)

Reference:

A. Invitation for Tender Number 44.08.2680.030.32.004.24.424 Dated 16 October 2024.

1. Khulna Shipyard Ltd (KSY) invites expression of interest (EOI) from reputed local/ foreign boatbuilding yard to submit offer for delivery of 4 (four) in number Armoured/ Bullet Proof High Speed Boat (Large) for the procuring entity as per Reference A. Brief description of the project is as follows:

- a. **Project Description.** Procurement of 4 (Four) x Armoured/ Bullet Proof High Speed Boat (Large).
- b. **Quantity.** 4 (Four) in number.
- c. **Construction Material.** The Hull of the boats shall be composite material. The superstructure of the boats shall be made of armoured/ bullet proof materials (as per BR6EN1063/ NIJ Level-III Ballistic Protection or Equivalent).
- d. **Classification Standard.** Lloyds/ DNV/GL/BV/NK.
- e. **Country of origin and manufacturer of all equipment, machinery, shafting, weapon, sensors, power generation and distribution.** As stated in the respective item's description in the technical specification.
- f. **Design.**

(1) The Armoured/ Bullet Proof High Speed Boats (Large) shall be designed based on proven hull design. Proven design shall mean, offered boats have already been built and same should be satisfactorily operated by any foreign navy/ Coast Guard/ law enforcing maritime security agencies. List of users of the offered proven boat should be attached with the complete offer.

(2) All machinery and equipment with accessories shall be of most current design.

(3) Country of Design: USA/ UK/ EU countries/ Turkey/ South Korea/ Japan/ Australia.

2. **Basic Technical Specification of Armoured/ Bullet Proof High Speed Boat (Large).**

- | | | | |
|----|-------------------------|---|--|
| a. | Length OA | : | 12~15 m. |
| b. | Breadth (max) | : | 3~4 m. |
| c. | Design Draught | : | Less than 1 m. |
| d. | Displacement | : | Not less than 10 ton. |
| e. | Bullet Protection Level | : | BR6 EN1063/ NIJ Level-III Ballistic Protection/ Equivalent |

- f. Maximum Speed : Not less than 40 knots (Normal Loading condition-50% POL, 50% Water and 100% Crew).
- g. Maximum Continuous Speed: Not less than 25 knots.
- h. Economical Speed : To be mentioned.
- i. Endurance : Not less than 200 NM.
- j. Crew : Not less than 8 persons.
- k. Sea Keeping and Habitability: Capable to operate Gun and run all machinery satisfactory at Sea State 3 and sustain at Sea state 4.

3. **Delivery Schedule.** 4 x Armoured/ Bullet Proof High Speed Boat (Large) will have to be delivered within 24 (Twenty Four) months from the date of signing the contract.

4. **Qualification of Bidder.**

- a. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must have the experience of supplying similar goods of at least 1 (one) contract successfully completed within the last 5 (five) years, with a value of at least taka 90 Crores (Taka Ninety Crore).
- b. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must have the experience of building offered proven Armoured/ Bullet proof high speed boat at his/ designated yard.
- c. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must have authorization certificate to supply offered proven design of Armoured/ Bullet proof high speed boat.
- d. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must be capable to import/ export (as applicable) weapon, sensors and ammunitions as per tender requirement.
- e. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must be reputed and financially sound.
- f. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must not have any litigation claim from relevant organization.
- g. The required average annual turnover of the bidder/ Bidder's Principal (local/ foreign boat building yard) shall be greater than BDT 60 (Sixty Crore) or equivalent foreign currency (USD/EURO/GBP/JPY/LIRA/AUD/KRW) in the last 3 (Three) years.
- h. The minimum amount of liquid assets or working capital or credit facilities of the bidder/ Bidder's Principal (local/ foreign boat building yard) shall be BDT 144 (One Hundred Forty Four Crore) or equivalent foreign currency (USD/EURO/GBP/JPY/LIRA/AUD/KRW).
- i. The Bidder/ Bidder's Principal (local/ foreign boat building yard) should have import/ export registration certificate (as applicable).
- j. The Bidder/ Bidder's Principal (local/ foreign boat building yard) should have Valid Trade License or equivalent license (as applicable).
- k. The Bidder/ Bidder's Principal (local/ foreign boat building yard) should have VAT/ Business Registration Certificate (as applicable).
- l. The Bidder/ Bidder's Principal (local/ foreign boat building yard) should have Updated TIN/ equivalent certificate and Tax Payment Certificate (as applicable).
- m. The Bidder/ Bidder's Principal (local/ foreign boat building yard) must have Bank Solvency Certificate.

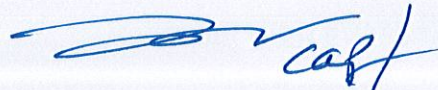
5. **Payment Terms.** Payment shall be made after receiving from the Procuring Entity as per payment schedule and will be released as per the final agreement.

6. **Scope of Supply of Bidder/ Bidder's Principal (local/ foreign boat building yard) .**

- a. Complete design package as per attached technical specification (Enclosure).



- b. Classification fees (Construction Supervision).
 - c. Complete Material, Equipment and Machinery package including Gun, Sensors, ammunitions, etc. as per Technical Specification of the procuring entity. Installation, test-trial, commissioning, training, FAT/ PSI (as applicable) of all the supplied items.
 - d. All expenses related to LC Charges, LC Margin, LC amendment Cost, LC Confirmation Cost (if any), Marine insurance, Custom duty, C&F agent Commission, Port charges, Transportation cost, etc.
 - e. All financial cost (Tender security, Performance Guarantee, Advance Payment Guarantee, Bank Guarantee (if any), Bank guarantee for warranty, insurance for LC, etc.).
 - f. During implementation of the project, the amount of Liquidated Damage (LD) imposed on KSY from the procuring entity due to delay in delivery of the boats (If imposed).
 - g. The amount of speed penalty imposed on KSY from the procuring entity due to less speed as mentioned in the technical specification (If imposed).
 - h. Cost of Fuel oil, Lub oil, Grease, Coolant, Crew Fooding on board etc. during test-trial and delivery.
 - i. All charges related to Boarding, Lodging, Fooding, Medical Support, and transportation etc. of OEM Engineers / Foreign Experts.
 - j. Warranty of the boats as per technical specification.
 - k. Any other expenses for successful completion, test trial and delivery of the boats.
7. **KSY Scope of Supply.** KSY scope of supply will be as follows:
- a. Act as local agent to deliver the subject mentioned boats.
 - b. Will not have any types of monetary involvement throughout the project.
 - c. Will receive a service charge from the Bidder/ Bidder's Principal (local/ foreign boat building yard).
8. Interested Shipbuilder/ Tenderer is hereby requested to contact following person:
- Md. Hasanuzzaman Tarek
Deputy Chief Engineer
Design & Planning Department
Khulna Shipyard Ltd., Bangladesh Navy Khulna-9201
Cell: +8801670715428 (whatsapp)
Email: contact@khulnashipyard.gov.bd
plans@khulnashipyard.com
9. Interested Bidder/ Bidder's Principal (local/ foreign boat building yard) will have to submit within the following deadline:
- a. Technical offer documents with seal and sign by 23 November 2024 at email contact@khulnashipyard.gov.bd and plans@khulnashipyard.com
 - b. Financial offer documents with seal and sign by 25 November 2024 **only at email ksygmdnp@gmail.com**
10. **Offer validity.** 180 days after submission.



MD. JULHASH UDDIN AHMED
Captain BN
For Managing Director

Enclosures:

- | | |
|------------------------------------|-----------------------|
| 1. General Instructions to the EOI | - 02 (Two) Pages. |
| 2. Technical Specification | - 16 (Sixteen) Pages. |

**GENERAL INSTRUCTIONS FOR SUBMISSION OF EOI FOR 4 (FOUR) IN NUMBER
ARMOURED/ BULLET PROOF HIGH SPEED BOAT (LARGE)**

Reference:

A. KSY EOI No. Project-723/868 dated 24 October 2024.

1. In Pursuant to the EOI at Reference A, the general instructions regarding submission of EOI are appended below:

a. **Selection Criteria.** The participants are to submit both technical and financial offer in complete. The offers which will be technically suitable will be considered for financial selection process. However, company profile and earlier experiences will also be a prime factor to select the Bidder/ Bidder's Principal (local/ foreign boat building yard). Upon submission of complete documents, the final bidder (most responsive) will be selected based on both technical and financial offer.

2. The following Technical documents are to be submitted with offer:

- a. Detail technical offer with clause-by-clause comments and catalogue.
- b. General Arrangement (GA) Drawing of the Proven Vessel.
- c. General Arrangement (GA) Drawing of the Offered Vessel.
- d. Detail technical offer with Catalogue/ Manuals of the following Main Equipment is to be submitted:
 - a) Main Engine
 - b) Waterjet
 - c) Propulsion Control System
 - d) Diesel Generator
 - e) Gun
 - f) Any other equipment as per technical specification
- e. Equipment shipment schedule.
- f. Proposed technical specification along with country of origin and country of manufacture of the equipment to be submitted.
- g. Speed vs Power calculation.
- h. List of Armoured/ Bullet Proof High Speed Boat built so far by of the Bidder/ Bidder's Principal (local/ foreign boat building yard).



J. Construction and Delivery schedule of the Boats by the Bidder/ Bidder's Principal (local/ foreign boat building yard).

k. Guarantee of unrestricted supply of spare parts for at least 10 years . The price of the spares should not increase by more than 5% every year.

l. Photograph of proven vessel.

m. Manufacturer's authorization for following items are to be submitted:

- (1) Certificate of Authenticity by the Designer.
- (2) Authorization Certificate from the Bidder/ Bidder's Principal (local/ foreign boat building yard) to supply the offered Proven Vessel.
- (3) Main Engines
- (4) Waterjet
- (5) Propulsion Control System
- (6) Diesel Generator
- (7) Gun
- (8) Any other equipment as per technical specification

3. Cut-off date for Submission of offer: **23 November, 2024 at 1200 hrs BD time for technical offer and 25 November, 2024 at 1200 hrs BD time for financial offer.**

4. **Miscellaneous**. Followings to be noted:

a. Authorized representative from Bidder/ Bidder's Principal (local/ foreign boat building yard) should sign the declaration form and submit the same with financial offer.

b. If awarded, the Bidder/ Bidder's Principal (local/ foreign boat building yard) must be ready to sign the contract within 15 days of issuance of NOA from KSY.

c. Without signed declaration form and other documents which are instructed to submit with the offer, the offer will not be considered as a complete one, hence will not be considered as responsive.

d. No offer will be accepted after the cut-off date and time.



DECLARATION

I (Name)..... on behalf of (Company name)confirm that all the points mentioned in the Enclosure-2 of the EOI are considered in our offer. We do hereby declare that the documents and information submitted with the offer are correct. We will be obliged by the decisions of KSY if there is any omission/ falsification of information/ documents furnished by us.

Signature

Name:

Official Seal:

Section 6.2 Technical Specifications

1. **Preamble.** Four (4) in number Armoured/ Bullet Proof High Speed Boat (Large) will be constructed for Bangladesh Coast Guard. The boats will have good sea-keeping ability and should be able to operate in shallow water near coasts and beaches in a hostile and contested operational environment.

2. **Purposes.** The HSBs shall be capable of following multi-mission/ purposes:

a. **Primary.**

- (1) Patrolling in hostile and contested operational environment.
- (2) Escort Duty.

b. **Secondary.**

- (1) Anti-piracy.
- (2) Anti-Smuggling.
- (3) Search and Rescue Operations.
- (4) Fishery Protection.
- (5) Humanitarian Aid and Disaster Relief Operation (HADR Operations).

3. **Quantity.** 4 (Four) x Armored/Bullet Proof High-Speed Boat (Large) with complete machinery, equipment, armament having all required accessories and spares as per specification.

4. **Year of Manufacture for all System/Equipment/Machineries/Armament.** 2024 or later.

5. **General Characteristics.** The Armored/Bullet proof High-Speed Boats (Large) shall be designed and constructed as per the specifications set forth herewith and as per standard boat building and should be able to withstand adverse operational and weather conditions.

a. **Maker** : Reputed boat building company having experience of producing proven design boats.

b. **Type** : High Speed Boat (Large) with Armored Protection/ Bullet proof properties.

6. **Workmanship and Materials.**

a. The workmanship on the hull and fittings throughout shall be completed by Supplier in accordance with applicable classification society standards. Care shall be taken by supplier to ensure fair lines, smooth surfaces and neat welding. The supplier shall have to maintain high standard regarding clean-keeping safety and environmental protection during outfitting of marine grade goods, materials and equipment.

b. All bolts, chains, fittings and other small equipment exposed to seawater shall be of corrosion resistance stainless steel or Aluminium or at least of galvanized steel. All wood used in the boat shall be well seasoned and free from defects.

c. The superstructure will be constructed by bullet proof material (as per BR6 EN1063/ NIJ Level-III Ballistic Protection or equivalent.). In case of use of dissimilar materials within hull and superstructure, metals shall be prevented from electrolytic corrosion. The dissimilar metal joints will be made by welding to an explosively bonded structural transition joint.

7. **Design.**

a. The HSBs (Large) shall be designed based on proven hull design. Proven design shall mean, offered boats have already been built and same should be satisfactorily operated by any foreign Navy/ Coast guard/ law enforcing maritime security agencies. List of users of the offered proven boat should be attached with the complete offer.

b. All machinery and equipment with accessories shall be of the most current design.

c. Country of Design: USA/ UK/ EU countries/ Turkey/ South Korea/ Japan/ Australia.

8. **Performance Curve and Calculation.** Following performance curves and calculations of the boats shall be provided after signing the contract:

a. Speed Vs Combined power curve.

b. Speed Vs Engine RPM.

c. Fuel consumption Vs Power.

d. Fuel consumption Vs Speed.

9. **Drawings.** Following drawings and other documents shall be in English Language:

a. A General Arrangement (GA) drawing of the offered Proven Boat shall be submitted during submission of tender by the supplier/boat builder.

b. Upon signing contract, a GA drawing of the Boats (in proper scale) shall have to be forwarded to the Bangladesh Coast Guard (BCG) Headquarters for approval.

c. Following Drawings of the offered boats shall be provided before keel laying of the boats:

(1) Preliminary GA drawing with principal particulars. The bidder shall provide 3D design of the boats and allow the buyer to make necessary interactive corrections in the design.

(2) Preliminary Machinery and Equipment Layout. The bidder shall provide 3D design of the boats and allow the buyer to make interactive corrections in the design.

(3) Preliminary Propulsion and Steering Gear arrangement. The bidder shall provide 3D design of the boats and allow the buyer to make interactive corrections in the design.

(4) Preliminary Mid ship Section Plan.

The above drawings shall be approved by a classification society (Lloyds/ DNV/ GL/ BV/ NK), before sending the drawings to the purchaser.

d. Following Drawings of the HSBs shall be provided before handing over the boats (The supplier shall provide 3D design of the boats and allow the buyer to make interactive corrections in the design in each case):

(1) GA drawing with principal particulars. The supplier shall provide 3D design of the boats and allow the buyer to make interactive corrections in the design.

(2) Machinery and Equipment Layout.

(3) Propulsion and Steering Gear arrangement.

(4) Armament associated system drawing/layout.

(5) Mid ship Section Plan.

(6) Scantling of Hull and Superstructure.

(7) Stability Booklet Including Hydrostatics Curve at Different Loading Conditions.

(8) Trim calculation at different loads.

(9) Full power trial record.

e. The supplier should submit Dimensional Profile Drawing with the offer.

10. **Principal Dimensions.**

a. Length Overall : 12 -15 m.

b. Beam : 3 - 4 m.

c. Design Draught : Less than 1 m.

d. Bullet Protection Level: BR6 EN1063/ NIJ Level-III Ballistic Protection/ Equivalent.

11. **Class.** The boats must be built according to an internationally recognized classification society building standard (Lloyds/ DNV/ GL/ BV/ NK). The classification society referred here must possess the following criteria:

- a. Classification society for the construction of boats must be permanent member of IACS.
 - b. Classification society will be from Lloyds/ DNV/ GL/ BV/ NK.
12. **Displacement.**
- a. Displacement : Not less than 10 tons.
13. **Speed.**
- a. Maximum Speed : Not less than 40 knots (Normal loading condition-50% POL, 50% water, 100% Crew).
 - b. Maximum Continuous Speed: Not less than 25 knots.
 - c. Economical Speed : To be mentioned.
14. **Endurance.** Not less than 200 NM.
15. **Crew.**
- a. Not less than 8 persons.
 - b. Maximum carrying capacity: To be mentioned.
16. **Ambient Condition in Areas of Operation.**
- a. Air Temperature 5° to 50° C.
 - b. Sea water temperature 10° to 32° C.
 - c. Humidity Up to 98%.
 - d. Sea water is muddy, sandy and dirty in the harbour where the ship is usually berthed and, in the area, where the ships will generally operate. The offered boats should be able to operate in such environment.
17. **Seating Arrangement.** To be arranged as per para 15 (a).
18. **Wheelhouse.** It will have easy access to and from different sections of the boat. The said wheelhouse should have natural ventilation system and air conditioning system. It should have enough space for accommodating engine control system, steering wheel, navigation and communication equipment. It should be capable of giving protection as per Article 58 (d) (**BR6 EN1063/ NIJ Level-III Ballistic Protection or equivalent**). to the crews and passengers of the boat.
19. **Watertight Bulkhead.** Sufficient watertight bulkhead to be provided in the HSBs to create enough subdivisions to comply with the classification society's standard.
20. **Cathodic Protection (where applicable).** The underwater hull be covered with necessary sacrificial zinc anodes as per class standards.

21. **Insulation and Paneling.** The cabin/ wheelhouse and engine room (machinery spaces) shall be insulated with suitable class approved insulating materials with matching material covering. The interior wall paneling will have sound dampening material with layers of fire retardant material finished with appropriate paint scheme.
22. **Storeroom/Space.** It will have sufficient spaces for storing dry provisions and essential stores for crews to sustain at least two days.
23. **Ventilation.** Wheelhouse and machinery compartments shall have enough ventilation for crews.
24. **Air Conditioning.** Necessary Air Conditioning to be provided for the boat crews.
25. **Refrigerator.** One in number refrigerator to be provided.
26. **Washroom/Toilet.** One in number suitable washroom/toilet shall be constructed at a suitable position with one wash basin. The wash basin will have freshwater facility, and the commode will have sea water facility through piping. Necessary arrangements should be provided for unrestricted use of sewage system.
27. **Tanks.** Following tanks with appropriate capacity will be fitted /built at suitable places of the Boat:
- a. Fuel : As per designed endurance. Necessary arrangement to be made available for fueling/de-fueling operation.
 - b. Lubricating Oil : Necessary arrangement to be made as per the demand of machinery system.
 - c. Fresh water : Necessary arrangements for fresh water storing to be made which is sufficient for the crews based on the said endurance period. Filling points for freshwater tank/s to be arranged at suitable places of the HSBs.

The fuel and lubricating oil tanks shall have capacities not less than those required for the endurance mentioned at Para 14 above, and the freshwater tanks shall have capacities not less than those required for minimum 8 crew/passengers for 2 days. The domestic RO freshwater filter system with collection tap for the crews needs to be installed for drinking purpose. The fuel tank including all other tanks need to be protected by armored/bullet proof and explosion proof materials to support HSBs primary role.

28. **Hydrophore Systems (Fresh Water and Sea Water).** One fresh water hydrophore tank/system shall be fitted at a suitable place. The marine toilets shall be fitted with one sea water hydrophore pump to flush the commodes. Fresh water supply (including tap) is to be arranged for wash basin and Toilet.

29. **Sea Keeping and Habitability.** The stability of the HSBs (Large) shall comply with the requirement of international stability criterion of IMO/ SOLAS regulation and Class rule. The stability of the HSBs shall comply with the requirement of internationally accepted stability rules of Classification Society. The HSBs should be able to operate guns and run all machinery satisfactorily at Sea State 3. However, the HSBs shall be capable of sustaining at Sea state 4. The boats also need to have good habitability for sustained operation.

30. **Vibration, Shock and Noise Damping.**

- a. **Hull Vibration.** The hull design and details of construction will have to be such as to avoid vibration that tends to cause damage to equipment fitted onboard.
- b. **Torsional Vibration.** Torsional vibration calculation for the propulsion system will have to be approved by the classification society.
- c. **Noise Damping.** Sound insulation will have to be provided to ensure that the noise levels at the cabin, wheelhouse does not exceed 65 dB during normal cruising speed.

31. **Engine room temperature.** Engine room temperature shall not exceed 10°C (degrees centigrade) more than the ambient temp. Adequate ventilation to be provided considering (Bangladesh) high ambient temperature and humid weather.

32. **Exhaust Flap.** Each Main diesel engine, Diesel generator and Emergency diesel generator (if installed) will be fitted with separate exhaust flap.

33. **Navigational Aids.** Necessary navigational aids shall be provided with each HSB including the following:

- a. 1 x AIS.
- b. 1 x Searchlight.
- c. 1 x Magnetic compass.
- d. 1 x Electro Magnetic compass (if integrated with offered boat's navigational system).
- e. 1 x Gyro compass (if integrated with offered boat's navigational system).
- f. 2 x Binocular.
- g. 1 x Barometer.
- h. 1 x Echo sounder.
- j. 1 x GPS.

All items above shall be of the latest model. The Navigational aids should preferably have individual displays. Country of Origin and manufacturing of navigational aids shall be from USA/ UK/ EU countries/ Japan.

34. **Communication Equipment.** Following communication equipment including accessories shall be provided. Details are as follows:

- a. 2 x VHF.
- b. 4 x Walkie-talkie set with spare battery (at least one spare battery for each set).
- c. 1 x Announce & Alarm system.

- d. 1 x SART.
- e. 1 x EPIRB.
- f. 1 x Long Range Acoustic Device (LRAD).

Country of Origin and manufacturing of communication equipment shall be from USA/ UK/ EU countries/ Japan/ Australia.

35. **Life-Saving Equipment.** The lifesaving system needs to be as provided per SOLAS and MARPOL standards. However, at least the following lifesaving appliances shall be provided:

- a. 12 x inflatable life jackets (As per Design complements).
- b. 2 x life buoys (As per Design complements).
- c. 1 x life raft for at least 8 persons (As per Design complements).

36. **Damage Control and Fire Fighting (DC & FF) Equipment.** Class approved DC & FF equipment are to be provided. List of DC & FF items are as follows (not limited to):

- a. Sufficient portable (CO₂, Dry powder, Foam) type fire extinguisher fitted at different places of the Boat.
- b. One fire pump with hydrant connection (preferable).
- c. Remotely operated Fixed firefighting system for machinery spaces.
- d. Fire and smoke detection alarm system (optional).

37. **Anchor.** One standard anchor with required amount of standard cable/rope (with safety margin) to anchor the boat at a depth of minimum 14 meters shall be provided. Size of chain cable/rope and weight of anchor shall be in accordance with the Class standard.

38. **Windlass.** One in number windlass shall be mounted on the fore deck to operate the anchor and chain cable/rope (as per offered design).

39. **Awnings.** Provision for waterproof foldable awnings (including rigging items/accessories) shall be arranged for covering the engine room hatch. To be mentioned as appropriate.

40. **First Aid locker.** 2 in number First aid locker is to be fitted in each HSBs. One in the Wheelhouse and one in the aft deck of the boat with standard items.

41. **Hull, Superstructure Material.** The hull of HSBs shall be Composite Material. The superstructure of HSBs shall be made of armored/ bullet proof materials (as per BR6 EN1063/ NIJ Level-III Ballistic Protection or Equivalent).

42. **Deck Fittings and Accessories.** The required number of corrosion resistant marine grade bollards, fairleads, cleats, stanchions, pillars, railings etc. shall be provided throughout the boat. Fittings must meet the requirement of the classification society.

43. **Paints.** Paint used in the HSBs shall meet the class standard. It should keep the boats hull, and superstructure free from corrosion and marine growth. Exposed spaces in the action route will be painted with non-skid paints. The paint scheme shall not harm the surface of composite/bullet proof material.

44. **Machinery and Equipment.** The boat will be fitted with inboard Marine type diesel engines along with matching waterjet propulsion. The main propulsion engines and diesel generators including exhaust and pipe connections should be mounted on flexible mountings. Special attention will be paid to reduce noise and vibration. All items and fittings should be of class approved marine standard.

45. **Propulsion Machinery.** The boats will be propelled by inboard marine type diesel engines with matching Waterjet propulsion. The general requirements are as follows:

- a. The propulsion system shall consist of two inboard marine type diesel engines capable of producing the required speed and should satisfy endurance conditions.
- b. All propulsion components shall be rated for not less than the full power and torque of the installed engine and shall be capable of transmitting the full power, torque, and thrust of the propulsion system in the ahead and astern directions.
- c. The propulsion system shall be designed and installed in accordance with Original Equipment Manufacturers (OEM) recommendations and guidance. The supplier shall obtain and provide certification letters from the OEM, verifying that the equipment installed on those HSBs follows all OEM requirements. Such certifications shall be provided for the propulsion system along with accessories according to the engines.
- d. All propulsion machinery (Marine engine, Waterjet) will be originated and manufactured from USA/UK/EU countries/Japan.

46. **Steering System.** A fully integrated, quick-response Class approved Steering system to steer the HSBs at designed speed shall be supplied. The full range of steering shall be available for both ahead and stern drive. Country of Origin and manufacturing of steering system shall be from USA/UK/EU countries/Japan.

47. **Diesel Generators.** 1 x Diesel generator, having the capacity of the boat's full load plus 10% extra shall be provided. The alternators should be 230 Volt, single phase, 50 Hz each supplying to all loads of the boat. The display panel should be placed at the operator's convenient position. Diesel generator will be originated and manufactured from USA/UK/EU countries/Japan.

48. **Emergency Portable Generator (Preferable).** 1 x Emergency portable generator capable of providing backup power in case of total power failure. This generator must be capable of supporting the electrical load of the communication system, machinery control system and the minimum cruising load to ensure safe operation of the boat. Emergency generator will be originated and manufactured from USA/UK/EU countries/Japan. Details of Emergency power supply to be mentioned (if Emergency portable generator not fitted onboard).

49. **Switchboard and Cabling.** 1 x Standard switchboard compatible and fulfilling the class requirement shall be provided. Onboard cabling shall be done with high-quality class approved fire retardant marine cables. The switchboard will be fabricated as per class requirements and rules. Components will be of class approved type. The switchboard will have both 24V DC and 230V AC panels. Switchboards will comprise of:

- a. Magnetic circuit breakers.
- b. Digital ampere & voltmeter.
- c. Change over switch for generating sets and shore power supply.
- d. Generating set control.
- e. All cables will be of Class approved type.

50. **Conversion Machinery.** Suitable conversion machinery (transformers/rectifiers) as required shall be provided.

51. **Shore Supply Cable.** A minimum 20 meters shore supply cable (Flexible high-quality marine grade) along with required accessories shall be provided.

52. **Emergency Lighting System.** Required numbers of automatic emergency lights shall be installed in the wheelhouse and machinery spaces to provide sufficient illumination in case of total power failure. These lights should automatically switch on/off with disruption/ resumption of the electric power supply.

53. **Pumps.**

- a. Fire & Bilge Pump (optional): One in number.
- b. Freshwater hydrophore pump: One in number.
- c. Seawater hydrophore pump: One in number.
- d. Fuel Oil Transfer Pump: One in number fuel transfer pump.
- e. Electric Submersible Pump: Two in number electrical submersible pumps.

54. **Armaments (Gun) and Associated Arrangements.** 1x 12.7 mm remotely (preferably from wheelhouse) operated Gun will be installed on top of the superstructure (top of wheelhouse-preferable) or Forward section of the boat to have 360° (preferable) firing arc. Built-in night vision capable electro-optronic system and laser range finder to ensure autonomous operation without the assistance of a separate fire control system is preferable. Originator and manufacturing countries should be from USA/ UK/ EU countries/ Turkey.

55. **Small Arms and Ammunition Stowage.** Small arms locker with ammunition stowage for the fitted guns and small arms with accessories are to be made as convenient.

56. **Office Equipment.** One in number Laptop (with original and licensed software including Bangla software interface) and one in number all in one laser printer shall be

provided with each boat. Original installation/ setup CDs/ diskettes for the software's and operating system shall be provided with the computer.

57. **Inclining Experiment.** The builder shall carry out inclining experiments of the boats on completion of their construction and will submit detailed documents, calculations/ curves to the Coast Guard Headquarters.

58. **Test and Trials.**

a. All tanks and compartments' water tightness shall be hose tested. Similarly, all longitudinal and transverse bulkheads, deck houses, comings, doors, hatches, windows, portholes, access covers, etc will have to be hose tested for ensuring water tightness. All tests shall be carried out before fitting any floor covering, pipes and fittings in positions as far as practicable. Defects (if any) will have to be rectified and re-tested.

b. **Factory Acceptance Test (FAT).** Main engines and Generators are to be factory tested by a team consists of 3 (three) members. The team will have 2 (two) x BCG personnel and 1(one) representative from Ministry of Home Affairs (MoHA). FAT will be conducted at the manufacturer's premises or manufacturer's authorized premises in the same country. Supplier will bear all expenses regarding international travel, accommodation and meals for the BCG team. All expenses related to internal travel within the manufacturer's country, reception and arrangement for entry into the country/concerned area for FAT will be borne by the supplier/ boat builder.

c. **Harbour Acceptance Trial (HAT) and Sea Acceptance Trial (SAT).** Performance tests of all machinery and equipment fitted onboard are to be carried out with BCG acceptance team at manufacturing country. The team will consist of 7 (seven) members, where 6(six) members will be from BCG (3 x Officers and 3x Sailors) and 1(one) member will be from MoHA. During trials; all machinery, equipment and all piping and wiring systems supplied and/or installed on board will be tested as far as practicable and should meet the international classification society's standard (as applicable). All expenses related to the HAT and SAT will be borne by the supplier. To conduct HAT and SAT including proof firing of Guns, the supplier shall send the HAT& SAT procedure and Test protocol for Proof firing of Gun to BCG HQ for approval no less than 1(one) month before the said tests.

(1) **Harbour Acceptance Trial (HAT).** The harbor trial of the following machinery (but not limited to) is to be carried out prior to sea trial and the test should meet the international classification society's requirement (as applicable):

- (a) Propulsion system.
- (b) Power generation system.
- (c) Armament system.
- (d) Emergency power supply (where applicable).
- (e) Main Switch Board.

- (f) Onboard power distribution system.
- (g) Motor & Starter System.
- (h) Navigation Radar.
- (j) GPS.
- (k) Gyro Compass.
- (l) Magnetic Compass.
- (m) Navigational Lights with panel.
- (n) Seawater system.
- (p) Echo Sounder.
- (q) Lighting system
- (r) Light Distribution Board.
- (s) Fresh Water System.
- (t) Sewage system.
- (u) Fire and Bilge Pump (where applicable).
- (v) Fire Detection System (where applicable).
- (w) Air-Conditioning System.
- (x) Siren.
- (y) Searchlight.
- (z) LRAD.

(2) **Sea Acceptance Trial (SAT).** SAT of the HSBs will be conducted by the supplier in the presence of BCG acceptance team and manufacturers of concerned major equipment on board at normal loading condition. Sea trial will be carried out to verify the correct operation of the systems and machinery during underway and to check that the test performance comply the HSBs specification. The trial will include:

- (a) Maximum continuous speed trial (for 2 hours).
- (b) Maximum speed trial (for 1 hour).
- (c) Crash stop.
- (d) Slam start.
- (e) Endurance test at economic speed (4 hours).
- (f) Turning circle.
- (g) Testing of all sensors for determining their sensitivity and maximum range and coverage.

(h) **Proof firing of all guns.** Proof firing of all guns will be conducted in Bangladesh under the arrangements of supplier. Necessary ammunition and target are to be arranged by the supplier's own expense.

All expense related to logistics support (POL, Ammunition, Fresh water, shore supply, inside transportation etc.) required for the SAT will be borne by the Supplier.

- d. **Bullet proof Test and Certification.** The ballistic protection for the boats, including the wheelhouse, cabins and critical areas such as the engine room and fuel tanks, must meet the BR6 EN1063/ NIJ Level-III Ballistic Protection or Equivalent. A certified and globally competent testing authority will conduct a comprehensive armored protection/ bullet proof test to verify that the protection level meets the specified standards mentioned in the HSBs' specification. This certification will ensure the boats are equipped to withstand threats in hostile operational environments. Test results and certification documentation must be provided to BCG before final acceptance.

59. **Insufficient Speed**

- e. The Supplier will provide guarantee that the supplied propulsion machinery will enable the boats to achieve maximum speed and maximum continuous speed.
- f. In case the HSBs fail to achieve the maximum speed and maximum continuous speed as stated in the contract specification, then penalties will be imposed on the Supplier for non-compliance of the contract as per the following:

Ser	Speed Deficiency from that of mentioned in the contract specification	Penalty counted in % of each HSB(Large) value for Speed Deficiency for each
1.	0.10 to 0.49 knot	1%
2.	0.50 to 0.99 knot	2%
3.	1.00 to 1.49 knots	3%
4.	1.50 to 1.99 knots	4%
5.	2.00 to 2.49 knots	5%
6.	2.50 to 2.99 knots	6%

- g. If the deficiency in actual speed of the HSBs is more than three (3.0) full knots below the speed guaranteed in the offer, then BCG, at its option, may, subject to the Supplier's right to effect alternations or corrections or cancel the Contract.

60. **Personnel Training.**

- a. Theoretical and practical training of 10 Operator and 10 maintenance BCG personnel on operation, maintenance and troubleshooting of boat's main machinery, equipment and armament system is to be arranged by the supplier. The training will be conducted in Bangladesh. The supplier shall appoint OEM authorized qualified

trainers for the said training package at his own expense. Classroom and all training aids will be borne by Purchaser. The cost of any materials used for the training purpose will be borne by the Supplier.

b. The supplier will provide at least two weeks training on maintaining and preserving the armoured/ bullet proof hull of the boat.

c. The supplier will provide at least 4 (four) weeks of department-wise separate training on operation and maintenance of main machinery, equipment and armament system.

61. **Delivery Schedule.** 4 (Four) x HSBs are to be constructed, test and trial to be completed and delivered within 24 months from the date of contract signing.

62. **Shipment and Delivery.** Supplier shall supply 4 (Four) x HSBs to BCG BASE CHATTOGRAM at his own responsibilities and expenses. HSBs will be shipped to Chattogram Seaport of Bangladesh by Seaworthy packing (**where applicable**). The HSBs including accessories shall be officially delivered to the following Consignee:

a. **4 (Four) x HSBs with Accessories.** The Zonal Commander, East Zone, Bangladesh Coast Guard, Fish Harbour, Chattogram, Bangladesh.

63. **Trial in Bangladesh (Where applicable).**

a. On arrival of HSBs in Bangladesh all on board Machinery and equipment Set to Work (STW) to be carried out by Supplier. All Machinery and equipment are to be operated at Harbor and at Sea satisfactorily.

b. A Progressive Speed trial to be conducted in Bangladesh. In the Progressive speed Trial, HSBs to be operated at maximum speed for at least one (1) hour. In case of speed deficiency, penalty to be imposed as per para 59(b).

c. To ensure sea trial safety in accordance with the laws of BANGLADESH, the Supplier shall provide BCG with appropriate details of the Supplier's staff who will be on board. These details shall include the biography including name, post, duty, experience and certificate(s) of competency with photographs and shall be submitted at least one month prior to the official sea trial.

64. **Payment Schedule.** Mode of payment shall be through bills/documents submitted by the Supplier to the Purchaser as per the following terms of payment:

a. **1st Installment.** 10% of the Contract Price will be paid on signing of the Contract and upon submission of a Bank Guarantee (BG) amounting equivalent to 10% of the Contract price in a scheduled Bank of Bangladesh.

b. **2nd Installment.** 15% of the contract Price will be paid upon submission of General Arrangement (GA) drawing of the HSBs and upon approval of the submitted GA drawing duly by the Purchaser.

- c. **3rd Installment.** 25% of contract price will be paid on submission of basic drawing approval, submission of purchase order copies for procurement of major machinery/ equipment (Main engines, Generator, Waterjet, construction materials, Guns etc.) as per the contract of 4 (Four) HSBs.
- d. **4th Installment.** 30% of Contract Price will be paid upon completion of successful HAT & SAT of HSBs and on shipment (Submission of shipping document).
- e. **5th and Final Installment.** 20% of Contract Price will be paid after final Acceptance of 4 (Four) HSBs.

65. **Final Acceptance.**

- a. The HSBs, after their successful completion of trial in Bangladesh and fulfilling the scope of supply as per technical specifications shall be accepted by BCG.
- b. On delivery, the 4 (Four) x HSBs must be in a clean, tidy and fully fitted and in operational condition.
- c. 5 (Five) x full set of documents (all designs and drawings) related to the operation and maintenance of the HSBs shall be delivered to BCG by the Supplier as per para 73.
- d. Final acceptance certificates will be signed by both the parties at the Bangladesh of Coast Guard Headquarter, Dhaka, Bangladesh.

66. **Liquidated Damages (LD).** The LD shall be one quarter of one percent (0.25%) of the Contract value per week or part thereof. The maximum amount of liquidated damages shall be ten percent (10%) of Contract value.

67. **Warranty.** Warranty for repair/replacement in Bangladesh at the manufacturer's cost of all the supplied machinery/equipment is 12 (twelve) months from the date of acceptance by the purchaser. The supplier will rectify/ replace, free of charges any defect in the supplied propulsion and other machinery/ equipment which are due to defective material, construction, miscalculation and/or improper workmanship on part of the manufacturer/supplier or to replace any such defective items, provided that the defects are discovered during the period of 12 (Twelve) months after satisfactory acceptance of supplied machinery by Bangladesh Coast Guard. Warranty repair / replacement shall be accomplished within 3 (Three) months of notification of the relevant defect. The warranty will be extended by non-operational period of the equipment.

68. **Mandatory tools and spare parts.** OEM recommended tools and spare parts for 3 years trouble free operation of the 4 (Four) x HSBs. Special tools, equipment, spares and materials required for the repair/maintenance work of Composite material used in the hull and superstructure are to be supplied.

69. **Trailer for Boat.** Suitable trailer capable of carrying and transporting the said HSBs are to be supplied for each HSB before final acceptance of the HSBs. A certificate of the trailer's load carrying capacity to be provided during delivery of the HSBs.

70. **Guarantee.** The supplier will supply spare parts for the next 10 years. The price of spares should not increase by more than 5% every year.

71. **Maintenance Support.** 5 (five) years maintenance support (at BCG cost, excluding warranty period) shall be provided by the supplier for the propulsion system, power generation system, weapon system and other machinery/ equipment/ system.

72. **Price for supplying ammunition for 12.7 mm Gun.** Supplier to quote price of (400 rounds) ammunition for the said gun fitted onboard HSBs separately.

73. **Manuals.** 5 (five) sets of the following manuals in English shall be provided for all machineries (as applicable):

- a. Operating manual of the boat and its fitted equipment.
- b. Technical manual/ maintenance manual of the boat and its fitted equipment.
- c. Workshop level maintenance manual with the circuit diagram of propulsion system and circuit diagram of all electrical fittings.
- d. Parts catalogue.
- e. Installation drawings and circuit diagrams for engines and their local and remote controls.
- f. All manuals and drawing (circuit diagram) for the Armaments and weapon system.