

BOARD PROCEEDINGS

Proceedings of : A Sub Group of experts.
Assembled at : Office of DIG (WW), 2nd Floor, "F" Wing, Nirman Bhawan, New Delhi.
On : 16 Dec' 2014, and subsequent dates
By the order of : HQ DG BSF, Prov. Dte (Water Wing) L/No.12/1025/2014-P/BSF/WC/3953-63 dated 01 Dec' 2014
For the purpose of : To prepare Qualitative Requirements (QRs)/ Technical Specifications of High Speed Combat Boat for ITBP for use in Pangong Tso Lake, Ladkh.

Composition of the Sub Group of Experts

Presiding Officer	:	Sh Kunal Mazumdar, DIG (WW), FHQ BSF, New Delhi
Member	1.	Sh N C Sundar Singh, DC(WW), FHQ BSF
	2.	Sh Sanjeev Singh, DC, CRPF
	3.	Sh <u>N. M. Gosal</u> , BPR&D
	4.	Sh J K Sharma, AC, SSB
	5.	Sh <u>S. K. Thakur, DC (Adm)</u> Assam Rifle
	6.	Sh <u>Uday Kumar Sah, AC</u> , CISF
	7.	Sh Rajesh Negi, DC, NDRF
	8.	Sh Dinesh Singh, Sub, NSF
	9.	Sh R K Thakur, AC, ITBP
Co-opted Member	:	Sh K K Dhawan, Principal Surveyor, I R S New Delhi

In compliance to the order of HQ DG BSF, Prov Dte (Water Wing) O/No.12/1025/2014-P/BSF/WC/3953-63 dated 01 Dec' 2014, the Sub group of Experts assembled, to prepare the Qualitative Requirements (QRs)/Technical Specifications of High Speed Combat Boat for ITBP for use in Pangong Tso Lake, Ladkh.

After detailed deliberation, the Sub Group of Experts framed the QRs/Technical Specification of High Speed Combat Boat for ITBP for use in Pangong Tso Lake, Ladkh.

The Sub Group of Experts has also examined the guidelines/instructions of MHA letter dated 27 June'2013 during the preparation of the QRs/Technical Specification of High Speed Combat Boat for ITBP for use in Pangong Tso Lake, Ladkh.

- (i) No financial implication is involved.
- (ii) The proposed QRs will lead to healthy and fair competition. The QRs are generic and many vendors are available in India as well as abroad to manufacture these Boat.
- (iii) The QRs have been framed by the Sub Group of Experts in consonance with the norms of the boat building industry, and a representative of the Class Society (IRS) has been associated in the process.
- (iv) The QRs have been framed by the Sub Group of Experts duly associating the representative of field Water Wing formations (i.e. user) after due deliberation and examining all aspects as per requirements of the ITBP formations.
- (v) All technical parameters have been elaborated/ expressed in details in the QRs.

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(vi) The QRs have been prepared after observing/adopting all the aspects like proper research of the latest technology and specific ground requirements of the ITBP duly associating the technical members of all the CAPFs, IRS and representative of the Water Wing formations. The information available on internet and literature available on the Naval Architect and Marine engineering field have been extensively studied & referred while framing the QRs, meeting the operational requirement on ground.

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Director General
Border Security Force

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF HIGH SPEED COMBAT BOAT

General: - The vessel is intended to be operating at high altitude (15000 feet above sea level) and temperature varying from -10 to +45 degree Celsius, the FRP material used should be capable of operating such variance in temperature. FRP high speed combat boat will be suitable for operational performance to patrolling duties in pangong Tso Lake Ladkh effectively. High Speed combat boat shall have hard mono hull 'V' type form optimized for resistance, maneuvering, sea-keeping by Model testing or by a proven Hull form. The boat should have a Service Life of 15 years with sustained operation of 6 to 8 hrs per day with an annual exploitation of 1000 hrs.

S/No.	Proposed QRs/Specifications	
PRINCIPAL PARTICULARS		
01.	General	The boat is to be design and built under class approval with appropriate class notation for hull and machinery.
02.	Length Hull Overall	11 Mtrs ± 0.25Mtrs
03.	Beam Overall	As per stability requirement.
04.	Draft	Not more than 0.8 m at full load.
05.	Depth	According to the Design
06.	Fuel Oil Capacity	Commensurate with endurance requirements and 25 % reserve.
07.	Endurance	Suitable to run the boat for minimum 200 NM at 25 Knots (minimum) at 15000 feet above sea level without refueling at full load.
08.	Speed	Minimum 25 Knots at full load. (To be verified in the presence of class surveyor alongwith owners rep) Maximum 35 Knots at full load. (To be verified in the presence of class surveyor alongwith owners rep)
09.	Compliment	12 Persons including crew.
10.	Area of Operation	Able to operate in Pangong Tso Lake
11.	Freshwater Capacity	120 Itrs

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S/No.	Proposed QRs/Specifications	
12.	Payload Capacity (Persons + Gear)	1560 Kg (130 x 12)
13	Approvals/ certificates	Class certificate from Indian Register of Shipping IRS/DNV/BV/LRS/NKK. Class Notation:- Swastika SU – HSLC RS3 IY “For operations within Pan gong Tso Lake Ladkh”. Operating in high altitude (15000 feet above sea level) and temperature varying from - 10 to - 45 degree Celsius.
14.	Stability	Intact and damage stability, survivability standard as per class rules.
CONSTRUCTION & MATERIAL		
15	Hull construction	(a) Mono Hull (deep V type FRP Material). The hull shall be constructed in accordance with classification society rules and shall be of one piece FRP mould with smooth mat finish scratch proof Gel coat outer finish in single mould. (b) Under deck includes longitudinal and transverse stiffeners and sub division bulkheads, with anti-flooding and damage control as per class requirements. (c) To have minimum draught for easy beaching and sail in shallow water. Bottom should be strengthened for this purpose.
16	Buoyancy	(a) The boats shall be fitted with sufficient buoyancy material in order to make the boat unsinkable. (b) Stability booklet is to be approved by Class. (c) Inclining test/Draft Survey to be conducted as per Class requirements.
17.	Materials	(a) Isophthalic polyester or better grade resin/gel coat to be used and approved by IRS/DNV/BV/LRS/NKK. (b) Glass Reinforced Plastic materials used in construction such as Chopped Standard Mat, Woven Roving etc. shall be approved by IRS/DNV/BV/LRS/NKK. (c) Core materials shall be approved by IRS/DNV/BV/LRS/NKK. (d) All SS Material used in the Deck or any other places should be Marine Grade of SS 316. (e) All the materials, workmanship and finish shall be of the highest standard / quality and as per class required. (f) All wind screen / glass should be toughened and 7.62 mm bullet proof glass. (g) All ply wood should be 100% water proof marine plywood. (h) All wood fittings should be high quality seasoned teak wood. (i) In the engine room final coat shall be of approved fire retardant resin. (j) TBT Free anti fouling paint is to be used for hull below the waterline. (k) The bidder must confirm that such material is available and would be class approved for the intended use.

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S/No.	Proposed QRs/Specifications	
DECK AND DECK FITTING		
18.	Deck	i) FRP encapsulated marine ply with scratch proof Gel coat finish and heavy duty non-skid surface, as per class requirements. ii) Hatches are to be provided on the main deck in way of engine room for easy repair, removal and maintenance of engine & other machinery equipment. iii) Anchor & mooring equipment as per class requirement. iv) Stainless Steel bow roller to suit anchor cable/rope. v) The bow deck has a secure Anchor Locker with a Rope/ Chain Locker. vi) Stainless steel guard railing all around the main deck for safety of crew and personnel. (vii) Safety Grab Handles where ever required.
19	Side Decks	(a) Bollards 04 Nos, Cleats 04 Nos to be fitted. (b) Clear Run obstruction free side decks with safety grab handles where ever required.
20.	Wheel house/ Cabin	(a) FRP with smooth mat finish Gel coat outer finish. Provided with toughened glass wind screens/windows both on front, sides and rear for good visibility. Side & rear wind screens/windows shall be of sliding type. Heavy duty pantograph /straight line standard windscreen wipers for front windows shall be provided. (b) Wheelhouse to have clear view all around for the driver (c) To have a forward locker for storage as per design.

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S/No.	Proposed QRs/Specifications	
		(d) Wheelhouse is to be adequately air-conditioned ventilated with air-conditioning system suitable for marine environment as per Class requirements. Adequate forced Ventilation is to be provided in the machinery spaces, wash places and WCs as per Class. (e) Lighting arrangement be catered for night lighting (red light). (f) Chart table and stowage area to be provided. (g) One first aid box to be installed in the wheel house. (h) The Wheelhouse/Cabin is to be totally enclosed, air conditioned and shall have comfortable seating arrangement for 12 Personnel with suspension control, back rest and seat belts. The access to wheel house shall be from the cabin aft bulkhead with weather tight doors. Provision of water closet & wash basin shall be provided in the accommodation space. Should have Armour Protection all around to wheelhouse/cabin including Bullet proof glass capable to stop 7.62 mm Bullet. . Ballistic test as per approved procedure and schedule to meet NIJ-111/EN 1063 standard.
21.	Control Area	(a) Helm / Drivers Console with all engine & propulsion controls and instrument panel, Steering wheel & Magnetic Compass.
		(b) Electric Switch Panel and all controls for crafts ancillary equipment shall be at Helmsman and Co-Pilot console.
		(c) Safety Grab Handles & Stowage hatch for loose items.
		(d) 2 Nos wall mounted Fans to be provided in the wheelhouse.
		(e) Hold space to be provided inside the wheel house for Keeping wireless Sets and battery next to the Driver.
PROPULSION SYSTEM & ENGINE CONTROLS		
22.	Engine	a) Two commercial rated, turbocharged after-cooled inboard four stroke marine diesel engine (Volvo/Cummins / MTU / MAN / CAT/SCANIA etc. make having indigenous product support) coupled with reversible gearboxes (twin disc/ZF etc. make having indigenous product support) driving water-jets.
		b) The propulsion system (engine, gear box & water jets) should have 1000 hrs of annual usages profile and approved by Class.
		c) The main engines are to be class approved and latest applicable MARPOL requirements compliant.
		d) The main diesel engine is to be remotely started from wheel house helms console through batteries. Redundancy is to be provided in the form of at least two independent battery sources that can be cross connected to start either engine.

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S/No.	Proposed QRs/Specifications
	<p>e) The wet exhaust system is to be used with suitable noise reduction arrangement.</p> <p>f) In order to ensure independent availability of propulsion system, the Main-Engine driven sea water pump shall supply cooling water requirements of the entire propulsion train (including the gearbox)</p> <p>g) Tubes of all cooling water heat exchangers external to the engine should be of 70:30 Cu-Ni suitable for operation in a corrosive extreme tropical salty environment. Zinc Protectors shall be provided in end covers.</p> <p>f) Machinery space is to be provided with suitable acoustic insulation.</p> <p>A suitable monitoring and control system for the main engines and gearbox is to be provided in the helms console. The engines and gearbox will be controlled from the helms console. The control station in the helms console should have provision for starting, stopping, monitoring, control and operation of main and auxiliary machinery. All instrumentation panels are to be watertight. All gauges are to be provided with integrated lighting with dimmer facility. Essential machinery instrumentation shall include the following (list is indicative and shall be enhanced as per OEM recommendations):-</p> <ul style="list-style-type: none"> (a) Tachometer. (b) Engine oil pressure alarm (c) Engine oil pressure trip (d) Engine oil temperature alarm (e) Engine water temperature alarm (f) Engine water temperature trip (g) Gearbox oil pressure alarm (h) Gearbox oil pressure trip (i) Gearbox oil temperature alarm (j) Emergency main engine stop (k) Over speed trip mechanism and indication (l) Lube oil pressure gauges for engines and gearboxes (m) Fresh water temperature gauges (n) Hour counter and heel indicator (o) Ammeters/voltmeters for monitoring battery charging/battery voltage/load current (p) Exhaust temperature gauges (q) Cooling water pressure gauge (r) Steering and trim position indicators (s) Air conditioning start/stop push buttons (t) Auxiliary generator RPM/frequency/lub oil pressure and temperature indicators, if fitted.

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S/No.	Proposed QRs/Specifications	
23.	Propulsion	Jet Drive (Hamilton/Kameva etc make, having indigenous product support) With bucket brakes and approved by class.
24.	Steering	Hydraulic steering operated from wheelhouse helms/command console. Steering Mechanism should have redundancy features (alternate mode of steering)
25.	Communication	Portable Hand Held Digital GPS with power adapter to be fitted through holder.
		One high resolution radar of 12 N-M range with integrated GPS/Echo Sounder/Speed Indicator/AIS/Chart Plotter having multi-functional display. One search and rescue transponder to be provided. One set of rocket parasuit flare signal SOLAS approved type.
		One VHF Radio (Marine) 25W TX/RX multi-channel positioned in wheel house.
		Two marine two-way walkie-talkies shall be provided.
		One marine waterproof binocular with 7X50 Magnification
26.	Compass	One Magnetic Compass positioned in wheel house
27.	Lights	Blue Flashing warning lights mounted to wheelhouse roof & four (facing port, stbd, forward & aft) flooding lights mounted on wheel house top.
28.	Navigation Lights	International Light Set as per COLREG requirement. Navigation light, Communication equipments, steering system should have backup system.
29.	Horn	12V Electric horn, police siren and public address (PA) system. Provide sound signaling equipments as per IRPCS.
30.	Electrical System	Both of the following standard power supplies (as appropriate including emergency loads) of adequate capacity to meet the electrical load of craft are to be used as per Class requirement:- (a) 230 V 50 HZ 1phase AC Generator with a growth margin of 20%. (b) 12/24V DC Load analysis chart justifying the capacities of the power supply source to be provided before finalizing the capacity of the generator. Single Line Schematic Diagram showing details of Power generation and distribution is to be provided. Sockets are to be provided at appropriate locations for 12/24V DC and/230V AC. Isolator switches for each battery bank and cross link switches to enable battery banks to be combined in emergency condition are to be provided as per Class requirements. Electrical fuse/Control panel shall be located at Helms command Console.

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S/No.	Proposed QRs/Specifications	
		<p>All electrical machineries/ systems such as Switchboard, Distribution Panels/ Normal & Alternate/Emergency supplies arrangement, lighting system/light fittings/ Navigational lights/ protection controls, instruments & indications, Starter, Motor, Control Panel and personnel safety arrangement etc wherever necessary shall be provided in the craft as per Classification Society's rules. All the electrical / NAVAIDS equipment shall be supportable in India for the life of the craft. One 230 V 50 Hz 1 Ph and one 12/24 V DC power sockets are to be provided in the wheel house. A watertight shore supply connection box 230 V, 1 phase, 50 Hz with 25 metre long cable shall be fitted on weather deck at an appropriate position conforming to Classification rules, to meet the requirements of the harbor loads. In case, the main supply of the consumers are of 12/24V DC, provision for suitable conversion of the shore supply to 12/24V DC needs to be catered for. Independent engine starting, maintenance free battery with charging from engine mounted alternator and crafts electrical system, suitable to provide power to the engine and placed in well ventilated secured boxes.</p>
31.	Lighting	<p>Compact Fluorescent Lighting & Emergency lightings etc supplied from 12/24 Volts DC distribution board shall be fitted to provide illumination to access ways, passage ways, in compartments and as approved by Class rules. Suitable battery charger to be provided to charge the battery for 230 V, 1 Phase, 50 Hz mains.</p>
		<p>Light indicators for navigation lights to be provided in the wheelhouse command console. Night lighting arrangement for all common area such as alleyways etc.</p>
32.	Passenger / Troops Facilities	<p>Cushioned Seating with Backrests and seat belt for 12 Nos persons, Stowage lockers beneath seating for Weapons, Ammunition, Lifejackets and Boat Equipment. Grab handles and safety armrests to all seating positions. Safety Grab Handles be placed at suitable locations.</p>
33.	Towing Arrangements	<p>1 No. Bow Towing / Mooring Bollard or Eye in the event that the craft is taken under tow or moored on a swinging mooring connection. 1 No. Stern Towing</p>
34.	Additional Equipment	<p>(a) 1 No High Power remotely operated Search Light (minimum - 100 watts) mounted on Wheelhouse Roof.</p>
		<p>(b) 2 Nos Windscreen Wipers to clear forward facing window</p>
		<p>(c) Gunwale to be broader to facilitate rapid boarding and disembarkation.</p>
		<p>(d) Railing in forward area.</p>
		<p>(e) 100 Mtrs. 16mm and 50 Mtrs. 20 mm P P Rope.</p>
		<p>(f) 02 Nos Boat Hooks.</p>

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S/No.	Proposed QRs/Specifications
	(g) 02 Nos Anchors suitable as per class requirements.
	(h) Suitable National Flag post at the top of wheel house.
	(i) Provision for mounting one LMG/MMG on aft deck
	(j) On board spare parts as per manufactures recommendation and guidelines of classification society & statutory requirements shall be provided.
	(k) A fabricated boarding platform is to be fitted at the transom.
	(l) Any other statutory requirement if any.
	m) Boat should be supplied with drawings, parts catalogs of all fitted Machinery & equipment, stability booklet and Boat data/hand Book.
35.	Fire fighting & Life Saving Fire fighting & life saving appliances as per class rules shall be provided.
36.	Transport & Stowage Suitable boat cradle with wheels & locking arrangement is to be provided.
37.	Lifting arrangements 04 Lifting Hooks at suitable places of hull with balancing load. 1 x 04 Nos Webbing Lifting Sling Set duly Certified Load Tested.
38.	Draught marking The draught marks shall be at forward and aft of the craft. The draught marking to be either side (port and starboard). The marks shall be of GRP and bonded to the hull with epoxide resin.
39.	Rubber fenders Pneumatic Fenders (a) Heavy duty "D" type Rubber fenders shall be fitted all round. (b) 04 Nos portable pneumatic fenders shall be provided with suitable fixing arrangements.
40.	Bilge System A suitable bilge alarm system is to be provided to indicate high water level in the bilge. The alarm indication is to be available on the bridge panel. The bilge system is to be designed in accordance with classification society regulations. A motor / engine driven bilge pump is to be provided. In addition, a manual portable bilge pump is to be provided.
41.	Fuel System Marine Grade Aluminum / stainless steel fuel tank(s) of adequate capacity, Cu/stainless steel fuel lines, suitable dual fuel - water separator filters, and remote shut-off valves are to be provided. The fuel system is to be designed in accordance with Classification society regulations. The tank(s) will have suitable inspection manhole, filling point on deck, drainage valve, air vent and suction line with valves for each engine that include water filter separator. Manual sounding facility and remote reading tank content gauge shall be provided for the fuel oil tank. The remote gauge shall be located at the helmsman's console in the Wheelhouse.

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S/No.	Proposed QRs/Specifications	
42.	Fire Detection and Fire Fighting for Machinery Spaces	The machinery space is to be provided with a suitable fixed fire fighting system (smothering) operated from the bridge and fire & smoke detection system meeting Class / SOLAS requirements. The alarm indication is to be available at the Bridge panel.
43.	Colour scheme	Gel coat shall be pigmented according to ITBP requirement
44.	Life Saving Equipments	Life Jackets for adults - 14 Nos SOLAS Approved type. Life Buoys with 30 mtrs rope & S.I. Light - 04 Nos SOLAS Approved type Portable fire extinguisher shall be provided throughout the vessel as required to meet the class/SOLAS requirements. However, the minimum quantity shall be as follow; (i) DCP of 4.5 Kgs each -2 Nos (ii) CO ₂ of 5 Kgs - 1 No (iii) AFFF of 9 Liters - 2 Nos
45.	Special Instructions/ guiding specifications	(a) The firm(s) should be an active manufacturer of Speed boats having works approval of their boat building facilities from IRS/DNV/BV/LRS/NKK. (b) The design and construction of the offered boats are to be approved by IRS/DNV/BV/LRS/NKK. (c) Two sets of boat drawing/documents and equipment's manuals having details of operation, Maintenance technical and detailed drawing to be provided by the builder to the Owner / Owner's representative at the time of delivery of boats. (d) The boats name, ID No. to be fixed in console. ITBP Emblem and Indian national Flag to be superimposed or laminated stickers in appropriate size on both sides of the Hull at superstructure at an appropriate place. (e) The boat shall be painted in according to ITBP requirement and ITBP Markings. (f) Following Certificates shall be supplied by the Builder:- i) Class Certificate. ii) Builder Certificate. iii) Anchor & chain/rope cable certificate class approved. iv) Major machinery (main engine, gearbox, generator, water jet) Type approval certificate. iv) Life jacket, fire system/equipment, navigation lights type approval certificate.

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S/No.	Proposed QRs/Specifications	
46	On Board Spares	Supplier will provide on board spares required for 1500 hours run operation of the all machinery equipment's, Jet Engine and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.
47	Cradles	The suitable boat cradle shall be provided for transportation and stowage alongwith each boat.

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