

F.No. IV-21011/03/2015-Prov-I / 090
Bharat Sarkar/Government of India
Griha Mantralaya/Ministry of Home Affairs
PM Division

26, Man Singh Road, Jaisalmer House
New Delhi, Dated 20 May, 2015

To,

DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

Subject: QRs and Trial Directive for High Speed Combat Boat .

Sir,

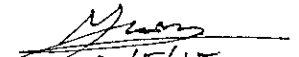
The QRs and Trial Directives for the High Speed Combat Boat have been approved by the Competent Authority in MHA, as per Annexure.

2. The CAPFs concerned will be accountable for correctness of the QRs/Trial Directives

3. Henceforth, all the CAPFs should procure the above item required by them strictly as per the laid down Technical Specifications/QRs.

Yours faithfully,


Encl: As above


20/5/15
(M.K. Chahar)

Under Secretary to the Govt of India
Tel: 23381278

Copy forwarded for necessary action to :-

✓ SO (IT), MHA : It is requested to host the QRs and Trial Directives (soft copy attached) on the MHA website (under the page of Organizational Set up- Police Modernization Division- Qualitative Requirement under Vehicle Equipments.


(R.K. Soni)
Section Officer (Prov-I)

Copy to: DDG (Procurement), MHA.

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVES OF HIGH SPEED COMBAT BOAT

Appendix - 01

Overview : - GRP high speed combat boat will be suitable for operational performance to patrolling duties in pan gong Tso Lake, Lydkh effectively. 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 boats are for patrolling & surveillance duties in high altitude lakes at 15000 feet above sea level where working temperature varies from -10 to +45 degree Celsius. The engine should have turbocharger and stoichiometric ratio of air fuel mixture suitable to operate with 100% efficiency at high altitude. The boat hull design, its material composition & built is to be under class approval with appropriate class notations.
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 plus 25 % reserve.
07	Endurance	Suitable to run the boat for minimum 200 Nm at 25 Knots (minimum) at 15000 feet above sea level without refuelling at full load.
08	Speed	Maximum 35 Knots at full load. (To be verified in the presence of class surveyor along with owners rep)
09	Compliment	12 Persons including crew.
10	Area of Operation	Able to operate in Pangong Tso Lake or any lake / water body situated at 15000 feet above sea level.
11	Freshwater Capacity	One stainless steel fresh water tank of 120 Litrs with pressure pump & other associated fittings.

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12.	<p>1560 Kg (130 Kgs x 12 Pers)</p> <p>(130 Kgs load include weight of the person, Arms/Amn, Personal Kit/clothing, Ration etc.)</p> <p>Class certificate from Indian Register of Shipping IRS/DNV/BV/LRS/NKK.</p> <p>Class Notation: - Swastika SU – HSLC RS3 IY “For operations within Pan gong Tso Lake Ladkh”.</p>
13.	<p>Operating in high altitude (15000 feet above sea level) and temperature varying from - 10 to - 45 degree Celsius.</p> <p>Intact and damage stability, survivability standard as per class rules.</p>

CONSTRUCTION & MATERIAL

15.	<p>Hull construction</p> <p>(a) Mono Hull (deep V type GRP Material). The hull shall be constructed in accordance with classification society rules and with smooth mat finish scratch proof Gel coat outer finish in single mould.</p> <p>(b) Under deck includes longitudinal and transverse stiffeners and sub division bulkheads, with anti-flooding and damage control as per class requirements.</p> <p>(c) To have minimum draft for easy beaching and sail in shallow water. Bottom should be strengthened for this purpose.</p>
16.	<p>Buoyancy</p> <p>(a) The boats shall be fitted with sufficient buoyancy material in order to make the boat unsinkable. HD-Foam to be placed inside the hull.</p> <p>(b) Stability booklet is to be approved by Class.</p> <p>(c) Inclining test/Draft Survey to be conducted as per Class requirements.</p> <p>(d) The Buoyancy material should be class approved.</p>
17.	<p>Materials</p> <p>(a) Vinyl Ester/Epoxy or better grade resin/gel coat to be used and approved by IRS/DNV/BV/LRS/NKK or any member of ACS.</p> <p>(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 or any member of IACS..</p> <p>(c) Core materials shall be approved by IRS/DNV/BV/LRS/NKK or any member of IACS..</p> <p>(d) All SS Material used in the Deck or any other places should be Marine Grade of SS 316 and should be class approved.</p> <p>(e) All the materials, workmanship and finish shall be of the highest standard / quality and as per class required.</p> <p>(f) All wind screen / glass should be toughened and 7.62 mm bullet proof glass.</p> <p>(g) All ply wood should be 100% water proof marine plywood.</p> <p>(h) All wood fittings should be high quality seasoned teak wood.</p> <p>(i) In the engine room final coat shall be of approved fire retardant resin.</p> <p>(j) TBT Free anti fouling paint is to be used for hull below the waterline.</p>

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(k) The bidder must confirm that such material is available and would be class approved for the intended use.
 (l) Multiaxial/ Non-Crimp Fabric approved by Class.

DECK AND DECK FITTING

18.	Deck	i) GRP 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. (a) Bollards 04 Nos, Cleats 04 Nos to be fitted.
19.	Side Decks	(b) Clear Run obstruction free side decks with safety grab handles where ever required.
20.	Wheel house/ Cabin	(a) GRP with smooth mat finish Gel coat outer finish. Provided with bullet proof 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. The glass should be of NIJ-III standard. (b) Wheelhouse to have clear view all around for the driver. A wash basin with arrangement for wash and drainage need to be provided in a suitable place. (c) To have a forward locker for storage as per design. Toilets with manual closets are to be provided. Cu-Ni pipes for seas water system, suction and toilet discharge with bronze valve and vent be provided. Sewage treatment plant of suitable capacity to be installed onboard for meeting requirement of MARPOL (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.

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- (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-III/EN 1063** standard.
- (i) Provision of emergency back-up light could be considered.
- (j) Heating arrangement for "Wind Screen" may be considered in view of area of operation.

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 or similar make etc. make having indigenous product support) coupled with reversible gearboxes (twin disc/ZF etc. make having indigenous product support) driving water-jets for 15 years.
- 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.
- e) The wet exhaust system is to be used with suitable noise reduction arrangement.

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)

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- (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.
 - (f) Machinery space is to be provided with suitable acoustic insulation.
- 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):-

- (a) Tachometer (Digital) to indicate engine RPM. Speed and fuel consumption.
- (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.

23. Propulsion Jet Drive (Hamilton/Kameya etc make, having indigenous product support for 15 years) With bucket brakes and

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		approved by class.
24.	Steering	Hydraulic steering operated from wheelhouse helms/command console.
25.	Communication	Steering Mechanism should have redundancy features (alternate mode of steering) Portable Hand Held Digital GPS & one marine 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 One night vision binocular shall be provided.
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 IRPCS (International Rules for Prevention of Collision at Sea) requirement.
29.	Horn	Navigation light, Communication equipments, steering system should have backup system. 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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31.	Lighting 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. Tally plates – Instruction tallies in English engraved on Stainless steel shall be located next to all individual items of equipment and adjacent to all gauges wherever applicable. All electrical fittings/switches should have IP 65 rating or above. LED light fitting & 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. Light indicators for navigation lights to be provided in the wheelhouse command console. Night lighting arrangement for all common area such as alleyways etc.
32.	Passenger / Troops Facilities Cushioned Seating with Backrests and seat belt for 12 Nos persons, Stowage lockers beneath seating for Weapons, Ammunition, Lif jackets and Boat Equipment. Grab handles and safety armrests to all seating positions. Safety Grab Handles be placed at suitable locations.
33.	Towing Arrangements 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
34.	Additional Equipment (a) 1 No High Power remotely operated Search Light (minimum - 100 watts) mounted on Wheelhouse Roof. (b) 2 Nos Windscreen Wipers to clear forward facing window (c) Gunwale to be broader to facilitate rapid boarding and disembarkation. (d) Railing in forward area.

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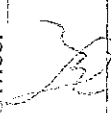
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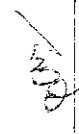


	(e) 100 Mtrs. 16mm and 50 Mtrs. 20 mm P P Rope.
	(f) 02 Nos Boat Hooks.
	(g) 02 Nos Anchors suitable as per class requirements.
	(h) Suitable National Flag post at the top of wheel house.
	(i) Provision for mounting one LMG/MMG on aft deck
	(j) On board spare parts as per manufactures recommendation 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
36.	Transport & Stowage
37.	Lifting arrangements
38.	Draught marking
39.	Rubber fenders Pneumatic Fenders
40.	Bilge System

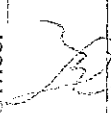




(a) Heavy duty "D" type Rubber fenders shall be fitted all round.

(b) 04 Nos portable pneumatic fenders shall be provided with suitable fixing arrangements.

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.

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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.
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 user 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 equipments 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.

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	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. v) Test load certificate of lifting sling.
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.

Presiding Officer: (Kunal Mazumdar), DIG(WW), FHQ, New Delhi

M-1:- *Sundar Singh*
 (N C Sundar Singh), DC (WW),
 FHQ BSF

M-2:- *Rajesh Negi*
 (Rajesh Negi), DC/NDRF

M-3:- *Sanjeev Singh*
 (Sanjeev Singh) DC/CRPF

M-4:- *R K Thakur*
 (R K Thakur) AC/ITBP

M-5:- *S K Thakur*
 (S K Thakur) DC/Assam Rifle

M-6:- *Uday K Sah*
 (Uday K Sah) AC/Exe, CISF

M-7:- *Suresh K*
 (Suresh K) Nb Sub/NSG

M-8:- *Dr M M Gosal*
 (Dr M M Gosal), BPR&D

Co-opted Member: *Dr K K Dhawan*
 (Cdr K K Dhawan), Principal Surveyor,
 IRS New Delhi

APPROVED / NOT APPROVED

Director General
 Border Security Force

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVES OF HIGH SPEED COMBAT BOAT

Appendix - 'D'

Overview : - GRP high speed combat boat will be suitable for operational performance to patrolling duties in pan gong Tso Lake, Ladkh effectively. 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	Trial Directives
PRINCIPAL PARTICULARS		
01.	General The boats are for patrolling & surveillance duties in high altitude lakes at 15000 feet above sea level where working temperature varies from -10 to +45 degree Celsius. Visa-Vis atmospheric pressure. The engine should have turbocharger and stoichiometric ratio of air fuel mixture suitable to operate with 100% efficiency at high altitude. The boat hull design, tis material composition & built is to be under class approval with appropriate class notations.	Water trials may include operation in shallow water during day and night at user place.
02.	Length Hull Overall 11 Mtrs ± 0.25Mtrs	Check with measuring steel tape in calm water and tally with approved drawings. Check lines plan and general arrangement drawings.
03.	Beam Overall As per stability requirement.	Check with measuring steel tape in calm water and tally with approved drawings. Check lines plan and general arrangement drawings.
04.	Draft Not more than 0.8 m at full load.	Check with measuring tape after loading the boat with 12 pers with all equipment @ 130 Kgs per person and tally with drawings.
05.	Depth According to the Design	Check with measuring tape and tally with approved drawing. Check lines plan and general arrangement drawings.
06.	Fuel Oil Commensurate with endurance requirements plus 25 % reserve.	Check fuel capacity needs endurance.
<p>Presiding Officer: <i>[Signature]</i> M-1 <i>[Signature]</i> M-2 <i>[Signature]</i> M-3 <i>[Signature]</i> M-4 <i>[Signature]</i> M-5 <i>[Signature]</i></p> <p>M-6 <i>[Signature]</i> M-7 <i>[Signature]</i> M-8 <i>[Signature]</i> M-9 <i>[Signature]</i> Co-opted Member <i>[Signature]</i></p>		

	Capacity		requirement. Certificate issued by class society/builder be obtained. Check additional uv-resistant fuel tank capacity.
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.	Check endurance requirement physically in trial and check corresponding fuel oil capacity.
08.	Speed	Maximum 35 Knots at full load. (To be verified in the presence of class surveyor alongwith owners rep)	To be physically measured with all equipments @ 130 Kgs per person during water trial with the help of GPS and stop watch. Speed trials need to be undertaken as per standard procedure. Check with 12 Pers load.
09.	Compliment	12 Persons including crew.	check the performance during trial.
10.	Area of Operation	Able to operate in Pangong Tso Lake or any lake / water body situated at 15000 feet above sea level.	Check tank, empty the tank. Fill tank with measured volume of 120 Ltrs.
11.	Freshwater Capacity	One stainless steel fresh water tank of 120 Ltrs with pressure pump & other associated fittings.	Check with 12 Pers load alongwith all equipments.
12.	Payload Capacity	1560 Kg (13C Kgs x 12 Pers) (130 Kgs load include weight of the person, Arms/Ann, Personal Kit/clothing, Ration etc.)	Check the criteria with classification society representative. Examine the class certificate issued by the classification society with the specified class notation for compliance.
13.	Approvals/class certificates	Class certificate from Indian Register of Shipping IRS/DNV/BV/ILRS/NKK. Class Notation:- Swastika SU - HSLC RS3 IY "For operations within Pan gong Tso Lake Ladkh".	
14.	Stability	Operating in high altitude (15000 feet above sea level) and temperature varying from - 10 to - 45 degree Celsius, Intact and damage stability, survivability standard as per class rules.	Check classification society approved stability booklet.
CONSTRUCTION & MATERIAL			
15.	Hull construction	(a) Mono Hull (deep V type GRP Material). The hull shall be constructed in accordance with classification society rules and with smooth mat finish scratch proof Gel coat outer finish in single mould.	a) Check the hull physically in presence of class representative. it should be as per class requirement. b) Certificate to this effect be obtained from
	Presiding Officer	M-1 <i>[Signature]</i> M-2 <i>[Signature]</i> M-3 <i>[Signature]</i>	M-4 <i>[Signature]</i> M-5 <i>[Signature]</i>
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	<p>(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 draft for easy beaching and sail in shallow water. Bottom should be strengthened for this purpose.</p>	<p>the builder. c) Check draft certificate also physically. d) Check in presence of rep of classification society. e) Check protection for propeller</p>
<p>16 Buoyancy</p>	<p>(a) The boats shall be fitted with sufficient buoyancy material in order to make the boat unsinkable. HD-Foam to be placed inside the hull. (b) Stability booklet is to be approved by Class. (c) Inclining test/Draft Survey to be conducted as per Class requirements. (d) The Buoyancy material should be class approved.</p>	<p>Check the design and construction as per drawings and obtain class approved certificate.</p>
<p>17. Materials</p>	<p>(a) Vinyl Ester/Epoxy or better grade resin/gel coat to be used and approved by IRS/DNV/BV/LRS/NKK or any member of IACS. (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 or any member of IACS.. (c) Core materials shall be approved by IRS/DNV/BV/LRS/NKK or any member of IACS.. (d) All SS Material used in the Deck or any other places should be Marine Grade of SS 316 and should be class approved. (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.</p>	<p>Material test certificate to be provided.</p>

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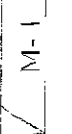
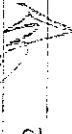
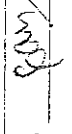
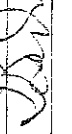
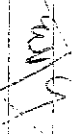
DECK AND DECK FITTING		(i) Multiaxial/ Non-Crimp Fabric approved by Class.
18.	Deck	<p>i) GRP encapsulated marine ply with scratch proof Gel coat finish and heavy duty non-skid surface, as per class requirements.</p> <p>ii) Hatches are to be provided on the main deck in way of engine room for easy repair, removal and maintenance of engine & other machinery equipment.</p> <p>iii) Anchor & mooring equipment as per class requirement.</p> <p>iv) Stainless Steel bow roller to suit anchor cable/rope.</p> <p>v) The bow deck has a secure Anchor Locker with a Rope/ Chain Locker.</p> <p>vi) Stainless steel guard railing all around the main deck for safety of crew and personnel.</p> <p>(vii) Safety Grab Handles where ever required.</p> <p>(a) Bollards 04 Nos, Cleats 04 Nos to be fitted.</p> <p>(b) Clear Run obstruction free side decks with safety grab handles where ever required.</p> <p>(a) GRP with smooth mat finish Gel coat outer finish. Provided with bullet proof 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. The glass should be of NIJ-III standard.</p> <p>(b) Wheelhouse to have clear view all around for the driver. A wash basin with arrangement for wash and drainage need to be provided in a suitable place.</p> <p>(c) To have a forward locker for storage as per design. Toilets with manual closets are to be provided. Cu-NI pipes for seas water</p>
19.	Side Decks	To be physically check as per class approved drawing.
20.	Wheel house/ Cabin	To be physically check as per approved drawing.
		To be physical inspected in water trial.
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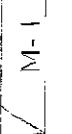
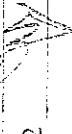
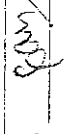
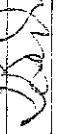
<p>21. Control Area</p>	<p>(a) Helm / Drivers Console with all engine & propulsion controls and instrument panel, Steering wheel & Magnetic Compass. (b) Electric Switch Panel and all controls for crafts ancillary equipment shall be at Helmsman and Co-Pilot console. (c) Safety Grab Handles & Stowage hatch 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.</p>	<p>To be physically checked. All parameter to be recorded for correctness during performance/functional trial.</p>
<p>system, suctions and toilet discharge with bronze valve and vent be provided. Sewage treatment plant of suitable capacity to be installed onboard for meeting requirement of MARPOL</p>	<p>(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-III/EN 1063 standard. (i) Provision of emergency back-up light could be considered. (j) Heating arrangement for "Wind Screen" may be considered in view of area of operation.</p>	<p>To be physically checked. Relevant certificates of material used in the Armour protection be checked and also duly certified by Class.</p>

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PROPULSION SYSTEM & ENGINE CONTROLS

<p>22. Engine</p>	<p>a) Two commercial rated, turbocharged after-cooled inboard four stroke marine diesel engine (Volvo/Cummins / MTU / MAN / CAT/SCANIA or similar make etc. make having indigenous product support) coupled with reversible gearboxes (twin disc/ZF etc. make having indigenous product support) driving water-jets for 15 years.</p> <p>b) The propulsion system (engine, gear box & water jets) should have 1000 hrs of annual usages profile and approved by Class.</p> <p>c) The main engines are to be class approved and latest applicable MARPOL requirements compliant.</p> <p>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.</p> <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>h) 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</p>	<p>Engine performance to be checked during speed trial. Check functioning of all instrument panel Check panel remote arrangements. Start stop engine 6-8 time and specific gravity and batteries to be tested before and after engine start.</p> <p>Certificate/Annual usage profile to be checked physically.</p> <p>Certificate to be checked.</p> <p>To be physically checked.</p> <p>To be physically checked.</p> <p>All gauges and parameters be physically checked in trial.</p>
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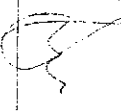
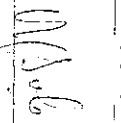

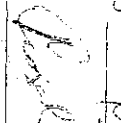
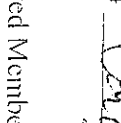


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23.	<p>Propulsion</p> <p>Jet Drive (Hamilton/Kameva etc make, having indigenous product support for 15 years) With bucket brakes and approved by class.</p>	<p>Check it functionality as per specifiers recommendation of OEM in presence of class society representative.</p>
24.	<p>Steering</p> <p>Hydraulic steering operated from wheelhouse helms/command console.</p> <p>Steering Mechanism should have redundancy features (alternate mode of steering)</p>	<p>To be checked physically during water trial.</p>


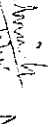
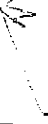


facility. Essential machinery instrumentation shall include the following (list is indicative and shall be enhanced as per OEM recommendations):-

- (a) Tachometer(Digital) to indicate engine RPM, Speed And fuel consumption.
- (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






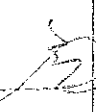




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25.	Communication Portable Hand Held Digital GPS & one marine GPS with power adapter to be fitted through holder. One high resolution radar of 12 N-M range with integrated GPS/Echo Sounder/Speed Indicator/AIS/Chart Plotter having multi-functional display. One search and rescue transponder to be provided. One set of rocket parasuri 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 7X-50 Magnification One night vision binocular shall be provided.	a) Check functioning of GPS, Radar functioning, Signal equipments be checked.. b) GPS reading by Compass. c) Check mounting of VHF Set/ Antena. d) Walkie-talkies and Binocular check physically.
26.	Compass One Magnetic Compass positioned in wheel house	Check functioning magnetic compass physically.
27.	Lights Blue Flashing warning lights mounted to wheelhouse roof & four (facing port, sibd, forward & aft) flooding lights mounted on wheel house top.	Check functioning physically.
28.	Navigation Lights International Light Set as per IRPCS (International Rules for Prevention of Collision at Sea) requirement. Navigation light, Communication equipments, steering system should have backup system.	Check physically all navigational lights are functional.
29.	Horn 12V Electric horn, police siren and public address (PA) system. Provide sound signaling equipments as per IRPCS.	check the functionality of horn on deck physically by switch ON and OFF 15 times.

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<p>30. Electrical System</p>	<p>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. 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.</p>	<p>Functioning of all electrical fittings to be checked during functional trial.</p>
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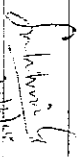
	<p>Independent engine starting, maintenance free battery with charging from engine mounted alternator and crafts electrical system, suitable to provide power to the engine and placed in well ventilated secured boxes.</p> <p>Tally plates - Instruction tallies in English engraved on Stainless steel shall be located next to all individual items of equipment and adjacent to all gauges wherever applicable.</p> <p>All electrical fittings/switches should have IP 65 rating or above.</p>	<p>Functioning of all lighting system to be checked during functional trial.</p>
31.	<p>LED light fitting & 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.</p> <p>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.</p> <p>Night lighting arrangement for all common area such as alleyways etc.</p>	<p>Check physically.</p>
32.	<p>Passenger / Troops Facilities</p> <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>	<p>To be physically checked. Load Test certificate of tow hook/arrangement is to be provided.</p>
33.	<p>Towing Arrangements</p> <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.</p>	<p>M-4 <u>[Signature]</u> M-5 <u>[Signature]</u></p> <p>M-3 <u>[Signature]</u> M-2 <u>[Signature]</u> M-1 <u>[Signature]</u></p> <p>M-9 <u>[Signature]</u> M-8 <u>[Signature]</u> M-7 <u>[Signature]</u></p> <p>Co-opted Member</p>
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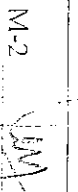
<p>34. Additional Equipment</p>	<p>1 No. Stern Towing</p> <p>(a) 1 No High Power remotely operated Search Light (minimum 100 watts) mounted on Wheelhouse Roof.</p> <p>(b) 2 Nos Windscreen Wipers to clear forward facing window</p> <p>(c) Gunwale to be broader to facilitate rapid boarding and disembarkation.</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> <p>(g) 02 Nos Anchors suitable as per class requirements.</p> <p>(h) Suitable National Flag post at the top of wheel house.</p> <p>(i) Provision for mounting one LMG/MMG on aft deck</p> <p>(j) On board spare parts as per manufactures recommendation and guidelines of classification society & statutory requirements shall be provided.</p> <p>(k) A fabricated boarding platform is to be fitted at the transom.</p> <p>(l) Any other statutory requirement if any.</p> <p>m) Boat should be supplied with drawings, parts catalogs of all fitted Machinery & equipment, stability booklet and Boat data/hand Book</p>	<p>Check Physically.</p>
<p>35. Fire fighting & Life Saving</p>	<p>Fire fighting & life saving appliances as per class rules shall be provided.</p>	<ul style="list-style-type: none"> - Arrangements of fire fighting equipment, their operation to be checked physically as per class approved drawing. - Lay out the buoys/jackets count and record. - Check class approved certificates
<p>36. Transport & Stowage</p>	<p>Suitable boat cradle with wheels & locking arrangement is to be provided.</p>	<p>Check Cradles arrangements physically.</p>

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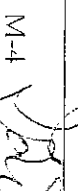
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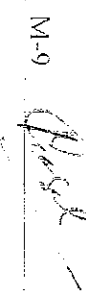
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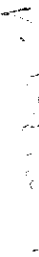
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37.	Lifting arrangements	04 Lifting Hooks at suitable places of hull with balancing load. 1 x 04 Nos Webbing Lifting Sling Set duly Certified Load Tested.	Check lifting points in number & location. Check strengthening record position. Load test certificate to be provided by builder to be physically checked.
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.	Check fender for adequacy/ location. Check class approvals certificate for materials. To be physically checked.
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.	Check functioning of bilge pump and alarm system.
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.	To be checked physically.
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.	To be checked physically and obtain class certificate provided by builders.
42.	Fire Detection and Fire Fighting 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.	To be checked physically.
43.	Colour	Gel coat shall be pigmented according to user requirement	To be checked physically.
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<p>44. Life Saving Equipments</p>	<p>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) CO₂ of 5 Kgs -- 1 No (iii) AFFF of 9 Liters -- 2 Nos</p>	<p>i) Lay out the buoys/jackets count and record. ii) Check stowage area. iii) Check class approved certificates. iv) Random testing of kit be done to ensure functionality.</p>
<p>45. Special Instructions/ guiding specifications</p>	<p>(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.</p>	<p>To be checked physically.</p>

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	v) Life jacket, fire system/equipment, navigation lights type approval certificate. vi) Test load certificate of lifting sling.	To be checked physically.
46	On Board Spares Supplier will provide on board spares required for 1500 hours run operation of the all machinery equipments, Jet Engine and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.	To be checked physically.
47	Cradles	To be checked physically.

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 (N C Sunder Singh), DC (WW), FHQ BSF

M-2:- *[Signature]*
 (Rajesh Negi), DC/NDRF

M-3:- *[Signature]*
 (Sanjeev Singh) DC/CRPF

M-4:- *[Signature]*
 (R K Thakur) AC/ITBP

M-5:- *[Signature]*
 (J K Sharma) AC/SSB

M-6:- *[Signature]*
 (S K Thakur) DC/Assam Rifle

M-7:- *[Signature]*
 (Uday Kr Sah) AC/Exe, CISF

M-8:- *[Signature]*
 (Suresh K) Nb Sub/NSG

M-9:- *[Signature]*
 (Dr M M Gosal), BPR&D

Presiding Officer

(Kunal Mazumdar), DIG(WW), FHQ, New Delhi

Co-opted Member
 (Cdr K K Dhawan), Principal Surveyor,
 IRS New Delhi

APPROVED / NOT APPROVED

28/11/14
 Director General
 Border Security Forces