

F.No. IV-21011/03/2013/Prov-I 9324  
Bharat Sarkar/Government of India  
Griha Mantralaya/Ministry of Home Affairs  
PM Division

26, Man Singh Road, Jaisalmer House  
New Delhi, Dated 07 October, 2014

To,

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

**Subject: QRs and Trial Directive for Aluminium Boat with 40/50 HP OBM (04 Stroke), Jet Boat, 20 Mtrs long Steel Boat, Amphibious Boat.**

The QRs and Trial Directives in respect of following Boat as per Annexure have been accepted by the Competent Authority in MHA :-

- (a) Aluminum Boat with 40/50 HP OBM (04 Strok)
- (b) Jet Boat.
- (c) Amphibious Boat.
- (d) 20 Mtr Long Steel Boat.

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


  
(P.K. Srivastava)

Under Secretary to the Govt of India

Tel: 23381278

Copy forwarded for necessary action to :-

The Section Officer (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: Director (Procurement), MHA.

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF ALUMINIUM BOAT WITH 40/50 HP OBM (04 STROKE)

**General** :- Aluminium Boat with 50 HP OBM are suitable to operate in riverine areas of Guwahati and South Bengal and 40 HP OBM for Silchar, Punjab & Jammu. All the tools / equipment required for conducting test / trial are to be provided by the builder. Intact and damage stability survivability standards specified as ISO 12217/as per class.

S/No.	PROPOSED QRS/TECHNICAL SPECIFICATION	
01.	Length Overall	5.25 m + 25 Cms
02.	Breadth Overall	1.8 m ± 5 Cms
03.	Depth (Hull only)	0.8 m (Min)
04.	Draught	0.3 m (Max) Fully Loaded
05.	Complement	02 Nos Moulded chairs of adjustable height for driver & co-driver. Cushion seating for 06 people with all equipments. Hand rail/seat belt to be provided.
06.	Speed	a) With 40 HP OBM the boat should achieve 12 knots with 3+1 person on board including driver. b) With 50 HP OBM the boat should achieve 16 knots with 3+1 person on board including driver.
07.	Hull	Semi V Shaped, Marine Grade Aluminium sheet (as approved/specified by classification society) with thickness of sheet to be minimum 2.25±0.25 mm. A minimum of two longitudinal primary members (girders) adjacent to both side of keel upto transom to be included in the design. Bottom and side transverse stiffeners (min 04 each) also to be catered for. The boat is to be propelled by four strokes 40 and 50 HP OBM (40 HP for WW Silchar, Punjab & Jammu and 50 HP for WW Guwahati & South Bengal) with electric start, Power trim and tilt. Transom should be strengthened/fabricated to mount the OBM
08.	Rubber fender	Heavy duty 'D' type rubber fender all around the boat. Additional 04 Nos. pneumatic fender are required.
09.	Power	Four strokes 40 and 50 HP OBM (40 HP for WW Silchar, Punjab & Jammu and 50 HP for WW Guwahati and South Bengal) with Electric Start, Power trim and tilt, remote control and steering system with suitable propeller of reputed make having service facility in India
10.	Floor	Anti Skid floor made of season teak wood

PO:

M-1:

M-2:

M-3:

M-4:-

M-5:

M-6:

M-7:

M-8:

M-9:

Co-opted Member:

M-6:

M-7:

M-8:

M-9:

Co-opted Member:

115

S/No.	PROPOSED QRS/TECHNICAL SPECIFICATION	
11.	Other equipment	Lifejackets - 09 Nos Solas / MMD approved
		Lifebuoys - 01 No. Solas/MMD approved
		Manual Bilge pump - 01 No.
		Boat hook - 01 No.
		12 V Exide Battery 100 AH - 01 No.
		Anchor graphinel type min 15 kg or As per class requirement - 01 No.
		SS bow and stern eyes - 02 Nos
		Oars - 02 Nos
		Storage locker of min 4 cubic feet - 01 No.
		Fire extinguisher ( Foam Type- ISI mark ) - 01 No.
		Cratches - 02 No.
		Fuel tank 22.5 Ltrs with connector - 02 Nos.
		Stainless Steel detachable parachute cloth canopy having height of 2 Mtr from floor of the boat.
		Hand Held Search Light
		Fire extinguisher 01 Kg capacity for ABC fire- 01 No.
		Onboard spare kit comprising of basic hand tools, spare propeller, set of spark plugs and fuel filter.
		16 mm polypropylene rope - 50 Mtrs.
		12 mm polypropylene rope- 100 Mtrs.
User manual of Boat & OBM- One set for each boat		
Tow hooks - 02 Nos.		
Lifting hooks - 04 Nos.		
12.	Design and construction	Should be approved by Indian Register of Shipping or any other Registered Classification Society and member of IACs. Hull construction process to be submitted to class society for approval.
13.	Life period	08 Years for Aluminum boat 08 years and 800 hrs run for OBM
14	Document	Aluminum boat with OBM should be supplied with documentations/drawings, fitted equipment details and Boat data Book.


**40/50 HP FOUR STORKE OBM :-**


01.	40/50 HP (Four strokes) OBM with Electric Start, Power Trim and Tilt with suitable propeller along with following accessories:-	
	<b>Description</b>	<b>Qty</b>
	Fuel Tank with connector	02
	Remote Control	01
	Gauge Tachometer	01
	Temperature Gauge	01
	Throttle Cable 18 ft	01

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

114

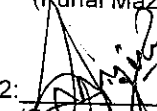
S/NO.	PROPOSED QRS/TECHNICAL SPECIFICATION		
	Steering Rotary System 18 ft	01	
	Steering Wheel (Adjustable)	01	
02.	The OBM should be controlled by remote single lever (Gear and Throttle combined ) and compatible to speed boat, Rigid Inflatable Boats and Aluminium boat of following dimensions		
	<b>Description</b>	<b>Speed Boat</b>	<b>RIB</b>
			<b>Aluminium Boat</b>
	Length	5.0-5.6 Mtrs	5.0-5.4 Mtr
	Beam	1.8-2.0 Mtrs	2.15-2.8 Mtr
	Draught	0.3 Mtr	0.4 Mtr
	Carrying capacity	10 persons	8 persons
			08 persons


M-1:   
(Ravindra Singh Kushwaha),  
AC, NDRF


M-4 :-   
(Th B K Singh ), AC, SSB

M-7:-   
(Sub Jagdish Prasad), NSG

PO :-   
(Kunal Mazumdar), DIG(WW) ,FHQ, BSF, New Delhi

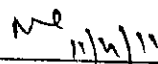
M-2:   
(Rajeev Singh, DC, CRPF


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

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

M-3:   
( R K Thakur ) AC , ITBP.

M-6 :-   
(Inspr Girija Shankar), CISF

M-9:-   
(Rajneesh Garg ), AC(WW) Rajarhat(SB Ftr)

Co-opted Member:-   
(Ravi Yadav), Surveyor, IRS, New Delhi

Approved/Not Approved.

  
Director General  
Border Security Force

**TRIAL DIRECTIVE FOR CARRYING OUT TRIAL EVALUATION AS PER THE QRS OF ALUMINIUM BOAT WITH 40 AND 50 HP OBM (04 STROKE)**

**General** :- Aluminium Boat with 50 HP OBM are suitable to operate in riverine areas of Guwahati and South Bengal and 40 HP OBM for Silchar, Punjab & Jammu. All the tools / equipment required for conducting test / trial are to be provided by the builder. Intact and damage stability survivability standards specified as ISO 12217/as per class.

S/No.	Proposed QRs/ Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
01.	Length Overall	5.25 m $\pm$ 25 Cms	Check with measuring tape in clam water and tally with approved drawings. Check <u>line plan and general arrangements drawing</u> and compare by physical checking.
02.	Breadth Overall	1.8 m $\pm$ 5 Cms	Check with measuring tape in clam water and tally with approved drawings Check <u>line plan and general arrangements drawing</u> and compare by physical checking.
03.	Depth (Hull only)	0.8 m (Min)	Check with measuring tape in clam water and tally with approved drawings Check <u>line plan and general arrangements drawing</u> and compare by physical checking.
04.	Draught	0.3 m (Max) Fully Loaded	Check with measuring tape after loading of 08 pers with all equipment @80 kg per person and tally with drawings.
05.	Complement	02 Nos Moulded chairs of adjustable height for driver & co-driver. Cushion seating for 06 people with all equipments. <u>Hand rail/seat belt</u> to be provided.	To check with 8 persons seated with all equipments in the boat comfortably in calm water. Physically check the seating arrangements.
06.	Speed	a) With 40 HP OBM the boat should achieve 12 knots with 3+1 person on board including driver. b) With 50 HP OBM the boat should achieve 16 knots with 3+1 person on board including driver.	To be physically checked with GPS during water trial by the formula. Speed = distance travel/time taken against tidal stream/current using standard procedure.

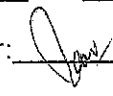
PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

119

S/No.	Proposed QRs/ Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
07.	Hull	Semi V Shaped, Marine Grade Aluminium sheet (as approved/specified by classification society) with thickness of sheet to be minimum $2.25 \pm 0.25$ mm. A minimum of two longitudinal primary members (girders) adjacent to both side of keel upto transom to be included in the design. Bottom and side transverse stiffeners (min 04 each) also to be catered for. The boat is to be propelled by four strokes 40 and 50 HP OBM (40 HP for WW Silchar, Punjab & Jammu and 50 HP for WW Guwahati & South Bengal) with electric start, Power trim and tilt. Transom should be strengthened/fabricated to mount the OBM	Thickness of the sheet will be checked as per approved drawing with the help of thickness gauge and obtain materials test certificate from builder.
08.	Rubber fender	Heavy duty 'D' type rubber fender all around the boat. Additional 04 Nos. pneumatic fender are required.	Check with measuring tape and tally with approved drawings and obtain materials test certificate from builder. Physically check portable fender.
09.	Power	Four strokes 40 and 50 HP OBM (40 HP for WW Silchar, Punjab & Jammu and 50 HP for WW Guwahati and South Bengal) with Electric Start, Power trim and tilt, remote control and steering system with suitable propeller of reputed make having service facility in India	Physically check the OBM as per engine certificate provided by the builder
10.	Floor	Anti Skid floor made of season teak wood	Physically check the teak wood quality same be free from any cracks and knots.
11.	Other equipment	Lifejackets - 09 Nos. Solas / MMD approved	i) Lay out all the eqpts, count and record.
		Lifebuoys - 01 No. Solas/MMD approved	(ii) Check class approved certificates.
		Manual Bilge pump - 01 No.	Check by operating for its functionality . by draining water outside the boat.
		Boat hook - 01 No.	Check the item and record.
		12 V Exide Battery 100 AH - 01 No.	Battery to be checked with the help of Hydrometer to check the gravity i.e. 1250-1280 in full charge. (ii) Check the battery for any cracks and leakage.
		Anchor graphinel type min 15 kg or As per class requirement - 01 No.	Obtain and check class approved. In case of any doubt, the same be verified from concerned agency.
SS bow and stern eyes - 02 Nos	Check its material to ascertain whether it is stainless steel or not.		
Oars - 02 Nos	Check the items, count and record.		

PO: M-1: M-2: M-3: M-4: M-5: M-6: M-7: M-8: M-9: 

11/4/14

Co-opted Member: 

(118)

S/No.	Proposed QRs/ Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers	
	Storage locker of min 4 cubic feet – 01 No.	Check by measuring tape to ascertain the dimension.	
	Fire extinguisher ( Foam Type- ISI mark ) – 01 No.	Check the items for its functionality.	
	Cratches - 02 No.	Check the items, count and record.	
	Fuel tank 22.5 Ltrs with connector – 02 Nos.	Check the items for its functionality.	
	Stainless Steel detachable parachute cloth canopy having height of 2 Mtr from floor of the boat.	Check its material to ascertain whether it is stainless steel or not and also check the quality of parachute cloth.	
	Hand Held Search Light	Test the eqpt to ascertain its functionality.	
	Fire extinguisher 01 Kg capacity for ABC fire- 01 No.	Test the eqpt to ascertain its functionality.	
	Onboard spare kit comprising of basic hand tools, spare propeller, set of spark plugs and fuel filter.	Check and count tools and also operate tools on engine/eqpts for testing the functionality.	
	16 mm polypropylene rope – 50 Mtrs.	Check the item and record	
	12 mm polypropylene rope- 100 Mtrs.	Check the items and record	
	User manual of Boat & OEM- One set for each boat	Check the items and record	
12.	Design and construction	Tow hooks – 02 Nos. Lifting hooks – 04 Nos.	Check the items and record. Check the items and record.
13.	Life period	Should be approved by Indian Register of Shipping or any other Registered Classification Society and member of IACs. Hull construction process to be submitted to class society for approval.	Check the design and construction as per drawing and obtain class approved certificate.
14.	Document	08 Years for Aluminum boat 08 years and 800 hrs run for OBM	
		Aluminum boat with OBM should be supplied with documentations/drawings, fitted equipment details and Boat data Book.	Check all records,

**40/50 HP FOUR STORKE OBM :-**

1.	40/50 hp (Four strokes) OBM with Electric Start, Power Trim and Tilt with suitable propeller along with following accessories:-	Physically check the OBMs as per certificate provided by the builder.
	<b>Description</b>	<b>Qty</b>
	Fuel Tank with connector	02
	Remote Control	01
	Gauge Tachometer	01
	Temperature Gauge	01
	Throttle Cable 18 ft	01
		Physically check for its functionality
		Physically check for its functionality
		Physically check for its functionality
		Physically check for its functionality
		Physically check for its functionality

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

(117)

S/NO.	Proposed QRs/Technical Specification			Trial Directive/procedure suggested for trial for Board of Officers
	Steering Rotary System 18 ft	01		Physically check for its functionality
	Steering Wheel (Adjustable)	01		Physically check for its functionality
02.	The OBM should be controlled by remote single lever (Gear and Throttle combined ) and compatible to speed boat, Rigid Inflatable Boats and Aluminium boat of following dimensions			Physically check for its functionality.
	<b>Description</b>	<b>Speed Boat</b>	<b>RIB</b>	<b>Aluminium Boat</b>
	Length	5.0-5.6 Mtrs	5.0-5.4 Mtr	5.0-5.6 Mtrs
	Beam	1.8-2.0 Mtrs	2.15-2.8 Mtr	1.8-2.0 Mtrs
	Draught	0.3 Mtr	0.4 Mtr	0.3 Mtr
	Carrying capacity	10 persons	8 persons	08 persons
				Check line plan and general arrangements drawing and compare by physical checking
				Check line plan and general arrangements drawing and compare by physical checking
				Check line plan and general arrangements drawing and compare by physical checking
				Physically check the seating arrangements as per occupancy.

M-1: [Signature]  
(Ravindra Singh Kushwaha),  
AC, NDRF

M-4 :- [Signature]  
(Th B K Singh ), AC, SSB

M-7:- [Signature]  
(Sub Jagdish Prasad), NSG

PO :- [Signature]  
(Kunal Mazumdar), DIG(WW), FHQ, BSF, New Delhi

M-2: [Signature]  
(Sandeep Singh) DC, CRPF

M-5 :- [Signature]  
(S K Thakur), DC, Assam Rifle

M-8:- [Signature]  
(Dr. M M Gosal) DSP, BPR&D

Co-opted Member:- [Signature]  
(Ravi Yadav), Surveyor, IRS, New Delhi

M-3: [Signature]  
(R K Thakur) AC, ITBP

M-6 :- [Signature]  
(Inspr Girija Shankar), CISF

M-9:- [Signature]  
(Rajneesh Garg ), AC(WW) Rajarhat(SB Ftr)

Approved/Not Approved.

[Signature]  
Director General  
Border Security Force



Appendix – C

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF JET BOAT

**General:** - FRP Jet boat suitable to operate in tidal waves of coastal areas of Gujarat and in riverine areas of Assam, South Bengal. Jet Boat shall have hard chine hull 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 10-12 hrs per day with an annual exploitation of 1500 hrs. All the tools/equipment required for the test/trials are to be provided by the builders.

S/No.	Proposed QRs/Specifications	
<b>PRINCIPAL PARTICULARS</b>		
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	10 Mtrs ± 10%
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 8 hours at 20 knots without refueling at full load.
08.	Speed	Minimum 30 Knots at full load.
09.	Compliment	12 Persons (04 crew and 08 Personnel). The Wheelhouse is to be totally enclosed, air conditioned and shall have comfortable seating arrangement for 4 crew and 8 Personnel with suspension control, back rest and seat belts. The access to wheel house shall be from wheel house aft bulkhead with weather tight doors. Provision of water closet & wash basin shall be provided in the accommodation space.
10.	Sea state	Operating – 3, Survival – 4
11.	Freshwater Capacity	100 ltrs
12.	Type of propulsion	Jet propulsion
13.	Approvals/class certificates	Class certificate from Indian Register of Shipping or from any IACS (International Association of Classification Society) member.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/15

S/No.	Proposed QRs/Specifications	
14.	Stability	Intact and damage stability, survivability standard as per ISO 12217/as per class rules.
<b>CONSTRUCTION &amp; MATERIAL</b>		
15	Hull construction	(a) 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/gelcoat to be used and approved by IRS / IACS classification society. (b) Glass Reinforced Plastic materials used in construction such as Chopped Standard Mat, Woven Roving etc. shall be IRS/IACS member approved. (c) Core materials approved by IRS/IACS member shall be used. (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 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.
<b>DECK AND DECK FITTING</b>		
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.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

11/4/14

S/No	Proposed QRs/Specifications	
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.	Wheelhouse	(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. (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.
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.
<b>PROPULSION SYSTEM &amp; ENGINE CONTROLS</b>		
22.	Engine	a) Two commercial rated, turbocharged after-cooled inboard four stroke marine diesel engine (Volvo/Cummins / MTU / MAN / CAT 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 & waterjets) should have 1500 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)

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/14

S/No	Proposed QRs/Specifications
	<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 marine 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"> <li>(a) Tachometer.</li> <li>(b) Engine oil pressure alarm</li> <li>(c) Engine oil pressure trip</li> <li>(d) Engine oil temperature alarm</li> <li>(e) Engine water temperature alarm</li> <li>(f) Engine water temperature trip</li> <li>(g) Gearbox oil pressure alarm</li> <li>(h) Gearbox oil pressure trip</li> <li>(i) Gearbox oil temperature alarm</li> <li>(j) Emergency main engine stop</li> <li>(k) Over speed trip mechanism and indication</li> <li>(l) Lube oil pressure gauges for engines and gearboxes</li> <li>(m) Fresh water temperature gauges</li> <li>(n) Hour counter and heel indicator</li> <li>(o) Ammeters/voltmeters for monitoring battery charging/battery voltage/load current</li> <li>(p) Exhaust temperature gauges</li> <li>(q) Cooling water pressure gauge</li> <li>(r) Steering and trim position indicators</li> <li>(s) Air conditioning start/stop push buttons</li> <li>(t) Auxiliary generator RPM/frequency/lub oil pressure and temperature indicators, if fitted.</li> </ul>
23.	<p>Propulsion Jet Drive (Hamilton/Kameva/Doen etc make, having indigenous product support) With bucket brakes and approved by class.</p>
24.	<p>Steering Hydraulic steering operated from wheelhouse helms/command console. Steering Mechanism should have redundancy features (alternate mode of steering)</p>

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

11/4/19

S/No	Proposed QRs/Specifications	
<b>COMMUNICATION/ELECTRONICS/NAVIGATION</b>		
25.	Communication	<p>Portable Hand Held Digital GPS with power adapter to be fitted through holder.</p> <p>One high resolution radar of 24 N-M range with integrated GPS/Echo Sounder/Speed Indicator/AIS/Chart Plotter having multi functional display.</p> <p>One search and rescue transponder to be provided.</p> <p>One VHF Radio (Marine) 25W TX/RX multi-channel positioned in wheel house.</p> <p>Two marine two-way walkie-talkies shall be provided.</p> <p>One marine waterproof binocular with 7X50 Magnification</p>
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 and police siren. Provide sound signaling equipments as per IRPCS.
30.	Electrical System	<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:-</p> <p>(a) 230 V 50 HZ 1phase AC Generator with a growth margin of 20%.</p> <p>(b) 12/24V DC</p> <p>Load analysis chart justifying the capacities of the power supply source to be provided before finalizing the capacity of the generator.</p> <p>Single Line Schematic Diagram showing details of Power generation and distribution is to be provided.</p> <p>Sockets are to be provided at appropriate locations for 12/24V DC and/230V AC.</p> <p>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.</p> <p>All electrical machineries/ systems such as Switchboard, Distribution Panels/ Normal &amp; Alternate/Emergency supplies arrangement, lighting system/light fittings/ Navigational lights/ protection controls, instruments &amp; 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.</p> <p>One 230 V 50 Hz 1 Ph and one 12/24 V DC power sockets are to be provided in the wheel house.</p> <p>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>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>

PO: [Signature] 11/4/14 M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/14

1140

S/No	Proposed QRs/Specifications	
31.	Lighting	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. 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 8 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.
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. (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 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.
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.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/2/17

S/No	Proposed QRs/Specifications	
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.
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 with Sea grey shade.
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 through out 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 <sub>2</sub> 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/LRS/DNV or any other member of IACs. (b) The design and construction of the offered boats are to be approved by IRS/LRS/DNV or any other member of IACs. (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. BSF/CAPF 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 sea grey colour with BSF/CAPF 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, waterjet) Type approval certificate. v) Life raft, life jacket, fire system/equipment, navigation lights type approval certificate.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/11/14

S/No	Proposed QRs/Specifications	
46	On Board Spares	Supplier will provide on board spares required for 1500 hours run operation of the Jet Engine and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.
47.	Life period	15 years
48.	Document	Boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.

M-1: [Signature]  
(Ravindra Singh Kushwaha),  
AC, NDRF

M-4 :- [Signature]  
(Th B K Singh ), AC, SSB

M-7:- [Signature]  
(Sub Jagdish Prasad), NSG

PO :- [Signature]  
(Kunal Mazumdar), DIG(WW) ,FHQ, BSF, New Delhi

M-2: [Signature]  
(Sanjeev Singh, DC, CRPF

M-5 :- [Signature]  
(S K Thakur), DC, Assam Rifle

M-8:- [Signature]  
( Dr. M M Gosal) DSP, BPR&D

Co-opted Member:- [Signature]  
(Ravi Yadav), Surveyor, IRS, New Delhi

M-3: [Signature]  
( R K Thakur ) AC , ITBP

M-6 :- [Signature]  
(Inspr Girijas Shankar), CISF

M-9:- [Signature]  
(Rajneesh Garg ), AC(WW) Rajarhat(SB Ftr)

✓ Approved/Not Approved.

[Signature]  
Director General  
Border Security Force



155 159

**Appendix -B**

**TRIAL DIRECTIVE FOR CARRYING OUT TRIAL EVALUATION AS PER THE QRS OF JET BOAT**


**General:** - FRP Jet boat suitable to operate in tidal waves of coastal areas of Gujarat and in riverine areas of Assam, South Bengal. Jet Boat shall have hard chine hull 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 10-12 hrs per day with an annual exploitation of 1500 hrs. All the tools/equipment required for the test/trials are to be provided by the builders.

S/No.	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
<b>PRINCIPAL PARTICULARS</b>			
01.	General	The boat is to be design and built under class approval with appropriate class notation for hull and machinery.	Check certificate issued by classification society for compliance.
02.	Length Hull Overall	10 Mtrs ± 10%	Check with measuring tape in calm water and tally with approved drawings. Check line plan and general arrangement drawing and compare by physical checking.
03.	Beam Overall	As per stability requirement.	Check with measuring tape in calm water and tally with approved drawings. Check line plan and general arrangement drawing and compare by physical checking.
04.	Draft	Not more than 0.8 m at full load.	Check with measuring tape after loading the boat with 12 pers with all equipments @ 80kg per person and tally with drawings.
05.	Depth	According to the Design	Check with measuring tape and tally with approved drawing.
06.	Fuel Oil Capacity	Commensurate with endurance requirements and 25 % reserve.	Check the capacity of the fuel tank by filling specified quantity of fuel in the tank. Obtain and check certificate issued by class society.
07.	Endurance	Suitable to run the boat for minimum 8 hours at 20 knots without refueling at full load.	02 hours average Range/Endurance trial to be carried out with 12 pers alongwith all equipments @ 80 kg per person during sea trial with the help of GPS.
08.	Speed	Minimum 30 Knots at full load.	To be physically measured after loading the boat with 12 pers with all equipments @ 80kg per person during trial at Sea for minimum 01 hour with the help of GPS and stop watch with and against the tide /current using standard procedure.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

(157) (158)

S/No.	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
09.	Compliment	12 Persons (04 crew and 08 Personnel). The Wheelhouse is to be totally enclosed, air conditioned and shall have comfortable seating arrangement for 4 crew and 8 Personnel with suspension control, back rest and seat belts. The access to wheel house shall be from wheel house aft bulkhead with weather tight doors. Provision of water closet & wash basin shall be provided in the accommodation space.	i) Ascertain comfortable sitting by 12 personnel. ii) Check seat belts for number / length. iii) Check the wheel house rooms and windows. It should be weather tight. iv) Check the wheel house arrangement as per drawings.
10.	Sea state	Operating – 3, Survival – 4	Boat Builder will provide drawing of the boat duly approved by class society mentioning that boat will operate in Sea State-3 conditions and have survivability upto Sea State-4. The trial will be carried out at Koteswar ( Bhuj) and OR Sunderbans (South Bengal)
11.	Freshwater Capacity	100 ltrs	Check for provision and check by filling 100 ltrs of water in the compartment for fresh water in the boat.
12.	Type of propulsion	Jet propulsion	Physically check the Jet propulsion unit as per specifications provided by the builder.
13.	Approvals/ class certificates	Class certificate from Indian Register of Shipping or from any IACS (International Association of Classification Society) member.	Physically check the class certificate and record.
14.	Stability	Intact and damage stability, survivability standard as per ISO 12217/as per class rules.	Check certificate issued by classified society for compliance to stability norms.
<b>CONSTRUCTION &amp; MATERIAL</b>			
15	Hull construction	(a) 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.	i) Check the hull physically in presence of IRS rep. It should be as per class society recommendation. ii) Certificate to this effect be obtained from the builder. iii) Examine the class certificate issued by classification society with the specified class notation for compliance. iv) Check load test certificate of each fitting.

PO: M-1: M-2: M-3: M-4: M-5: M-6: M-7: M-8: M-9: Co-opted Member: 

11/4/11

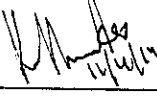





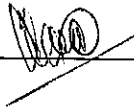
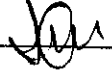
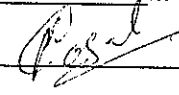
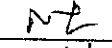
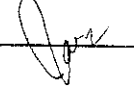
(153) (157)

S/No.	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
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.	i) Class approved stability booklet to be checked physically. ii) Inclining test to be witnessed by class society in presence of BSF/CAPF officials and test report to be obtained from builder.
17.	Materials	(a) Isophthalic polyester or better grade resin/gelcoat to be used and approved by IRS / IACS classification society. (b) Glass Reinforced Plastic materials used in construction such as Chopped Standard Mat, Woven Roving etc. shall be IRS/IACS member approved. (c) Core materials approved by IRS/IACS member shall be used. (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 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.	i) Check material used certificate issued by class society. ii) Check test report of SS items. It should be SS-316. iii) Check finish of fire retardant resin coating in the engine room. There should be no cracks and spots.
<b>DECK AND DECK FITTING</b>			
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 equipments. 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.	i) Check as per class specification. ii) Check anchor and mooring equipment physically and check its functionality during the sea trial. iii) Check its material and functionality during sea trial. iv) Check physically its functionality during sea trial. v) Check physically and test for its functionality. Check materials. It should be stainless steel. vi) Check physically it should be fitted as per drawing. vii) check physically fitted as per drawing.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

152 156

S/No	Proposed QRs/Specifications	Trial Directive/procedure suggested for trial for Board of Officers
19	(a) Bollards 04 Nos, Cleats 04 Nos to be fitted.	i) Check physically the bollards and cleats it should be as per approved drawing. ii) Check its foundation plates and nut bolt for proper strength. iii) Examine the Class certificate issued by classification society with the specified class notation for compliance. iv) Check load test certificate for each fitting (either from the OEM of the fitting or any other suitable certifying agency post testing).
	(b) Clear Run obstruction free side decks with safety grab handles where ever required.	Check physically it should be as per approved drawing.
20.	(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.	i) Physically check the visibility from the wheel house. ii) Stand in wheel house and test the visibility for all round. iii) Check the side and rear window glass of the wheel house it should be sliding type. iv) Check functionality of windows wiper after splashing water on the window glass.
	(b) Wheelhouse to have clear view all around for the driver	Stand in wheel house and test the visibility for 360 (all round).
	(c) To have a forward locker for storage as per design.	Check physically locker size as per approved drawing of the boat.
	(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.	i) Check AC/Ventilation for adequacy/comfort functioning. ii) Check window /hatches for number/location and test functionality. iii) Physically examination to be carried out in presence of class rep as per class approved plan. iv) Physically check chart table and night lighting arrangement. v) Check for provision and record. Made list of medicines/items.

PO:  M-1:  M-2:  M-3:  M-4:  M-5:   
 M-6:  M-7:  M-8:  M-9:  Co-opted Member:   
 11/1/14

LST (155)

S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
21.	Control Area	(a) Helm / Drivers Console with all engine & propulsion controls and instrument panel, Steering wheel & Magnetic Compass.	i) Check number and location of controls for easy viewing by the master. Carry out functional test. ii) Check steering wheel for easy operation. iii) Check magnetic campus physically. Check its correctness with the help of GPS.
		(b) Electric Switch Panel and all controls for crafts ancillary equipment shall be at Helmsman and Co-Pilot console.	iv) Check for provision and location of all controls for easy viewing by copilot.
		(c) Safety Grab Handles & Stowage hatch for loose items.	Check physically safety grab handles and stowage hatch for loose items.
		(d) 2 Nos wall mounted Fans to be provided in the wheelhouse.	Check physically fans, count and check its functionality by ON & OFF operation.
		(e) Hold space to be provided inside the wheel house for Keeping wireless Sets and battery next to the Driver.	Check for provision. Place wireless sets and battery and check its correctness.
<b>PROPULSION SYSTEM &amp; ENGINE CONTROLS</b>			
22.	Engine	a) Two commercial rated, turbocharged after-cooled inboard four stroke marine diesel engine (Volvo/Cummins / MTU / MAN / CAT etc. make having indigenous product support) coupled with reversible gearboxes (twin disc/ZF etc. make having indigenous product support) driving water-jets.	The boat builder to provide type approval certificate from the classification society.
		b) The propulsion system (engine, gear box & waterjets) should have 1500 hrs of annual usages profile and approved by Class.	The boat builder to provide type approval certificate from the classification society.
		c) The main engines are to be class approved and latest applicable MARPOL requirements compliant.	The boat builder to provide type approval and latest IMO NOx complied certificate from the classification society.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/14

150 (154)

S/No	Proposed QRs/Specifications	Trial Directive/procedure suggested for trial for Board of Officers																															
	<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>(i) Prepare main engine for operation.                      (ii) Start port main engine. Stop as soon as LO pressure are achieved.                      (iii) Repeat – Start – Stop 06 times.                      (iv) Carry out same for STBD side main engine also. No. of starts given:-                      Port – 06 starts, STBD -- 06 starts</p> <table border="1" data-bbox="1229 482 1701 754"> <thead> <tr> <th rowspan="2">Attem pts</th> <th colspan="3">Time in (Sec)</th> </tr> <tr> <th>ME (P)</th> <th>ME (S)</th> <th>DG Set</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td></tr> </tbody> </table> <p>Note:- specific gravity of batteries to be checked before and after endurance trial.</p>	Attem pts	Time in (Sec)			ME (P)	ME (S)	DG Set	1				2				3				4				5				6			
Attem pts	Time in (Sec)																																
	ME (P)	ME (S)	DG Set																														
1																																	
2																																	
3																																	
4																																	
5																																	
6																																	
	<p>e) The wet exhaust system is to be used with suitable noise reduction arrangement.</p>	<p>Check the exhaust physically it should be as per approved plan.</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>Check the system physically during sea trial.</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 marine environment. Zinc Protectors shall be provided in end covers.</p>	<p>Check physically the heat exchangers and zinc protector for its functionality during sea trial.</p>																															

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
 11/4/19

149 153

S/No	Proposed QRs/Specifications	Trial Directive/procedure suggested for trial for Board of Officers
	<p>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):-</p> <ul style="list-style-type: none"> <li>(a) Tachometer.</li> <li>(b) Engine oil pressure alarm</li> <li>(c) Engine oil pressure trip</li> <li>(d) Engine oil temperature alarm</li> <li>(e) Engine water temperature alarm</li> <li>(f) Engine water temperature trip</li> <li>(g) Gearbox oil pressure alarm</li> <li>(h) Gearbox oil pressure trip</li> <li>(i) Gearbox oil temperature alarm</li> <li>(j) Emergency main engine stop</li> <li>(k) Over speed trip mechanism and indication</li> <li>(l) Lube oil pressure gauges for engines and gearboxes</li> <li>(m) Fresh water temperature gauges</li> <li>(n) Hour counter and heel indicator</li> <li>(o) Ammeters/voltmeters for monitoring battery charging/battery voltage/load current</li> <li>(p) Exhaust temperature gauges</li> <li>(q) Cooling water pressure gauge</li> <li>(r) Steering and trim position indicators</li> <li>(s) Air conditioning start/stop push buttons</li> <li>(t) Auxiliary generator RPM/frequency/lub oil pressure and temperature indicators, if fitted.</li> </ul>	<ul style="list-style-type: none"> <li>i) Check physically as per class approved plan.</li> <li>ii) The control system should be tested in accordance with maker's recommendations.</li> <li>iii) All the gauges and alarms be checked for its functionality in the presence of classification society representative.</li> </ul>

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/14

148 152

S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
23.	Propulsion	Jet Drive (Hamilton/Kameva/Doen etc make, having indigenous product support) With bucket brakes and approved by class.	i) Check its functionality as per recommendation of OEM in presence of class society representative. ii) Boat builder to provide type approved certificate from the classification society.
24.	Steering	Hydraulic steering operated from wheelhouse helms/command console. Steering Mechanism should have redundancy features (alternate mode of steering)	Check its functionality as per recommendation of OEM in presence of classification society representative. Boat builder should provide type approved certificate. Check steering in all modes.
<b>COMMUNICATION/ELECTRONICS/NAVIGATION</b>			
25.	Communi- cation	Portable Hand Held Digital GPS with power adapter to be fitted through holder.	i) Check functionality of portable hand held digital GPS. ii) Check power adapter's functionality by connecting GPS.
		One high resolution radar of 24 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.	i) Check all functionality of Radar as per OEM recommendations. ii) Switch ON the radar. iii) Key light up, the display shows the start up information. iv) Check the picture on different ranges. v) Check the range and bearing using VRM. vi) Check for guard tones and alarms. vii) Check the Zoom function. viii) Check for lat/long reading. ix) Check type approval certificate of SART.
		One VHF Radio (Marine) 25W TX/RX multi-channel positioned in wheel house.	i) Check the equipments, OEM manual and frequencies. ii) Test the equipment by communicating with other similar equipment and ascertain whether the same is functional at MMB channels/frequencies or not.
		Two marine two-way walkie-talkies shall be provided.	i) Check the equipment, OEM manual and frequencies. ii) Test the equipment by communicating with other similar equipment and ascertain whether the same is functional.
		One marine waterproof binocular with 7X50 Magnification	i) Check the equipment, OEM manual and instructions. ii) Check its functionality.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

11/4/14



147 151

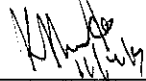
S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
26.	Compass	One Magnetic Compass positioned in wheel house	i) Check for its functionality and check its correctness with the help of GPS. ii) It should be placed on plain surface. iii) Check compass swing.
27.	Lights	Blue Flashing warning lights mounted to wheelhouse roof & four (facing port, stbd, forward & aft) flooding lights mounted on wheel house top.	Check for its functionality by switch ON-OFF 06 to 10 times.
28.	Navigation Lights	International Light Set as per COLREG requirement. Navigation light, Communication equipments, steering system should have backup system.	Check for its functionality by switch ON-OFF 06 to 10 times. Check arcs of light physically in accordance with IRPCS.
29.	Horn	12V Electric horn and police siren. Provide sound signaling equipments as per IRPCS.	Check for its functionality by switch ON-OFF 06 to 10 times. Check sound signaling equipments in all modes.
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. 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.	i) Check all the equipments, OEM manuals. ii) Functional test the each light fitting from 220V, AC supply. iii) Proceed to each individual light fitting to check for functioning and record down the result. iv) Switch on the 220V, AC supply from the main switch board. The emergency light system should cut automatically. v) Proceed to check each emergency light. vi) Check functionality of water shore connection from the jetty. vii) Check the batteries for its functionality by hydrometer if the specific gravity is 1250-1280, it is fully charged.

PO: [Signature] 11/4/19 M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4:- [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/19

146 150

S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
		<p>One 230 V 50 Hz 1 Ph and one 12/24 V DC power sockets are to be provided in the wheel house.</p> <p>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>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 &amp; 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 for provision and its functionality by switch OFF-ON at least 10 times.</p> <p>Check for provision of light indicators for navigation light in wheel house at command console and for functionality.</p>
32.	Passenger / Troops Facilities	Cushioned Seating with Backrests and seat belt for 8 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>i) Check as per approved drawing.</p> <p>ii) Check by sitting 08 person comfortably.</p> <p>iii) Physically check seat belts.</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.</p> <p>1 No. Stern Towing</p>	<p>i) Check physically as per approved drawing of the boat.</p> <p>ii) Check load test certificate of each fitting.</p>

PO:



M-1:



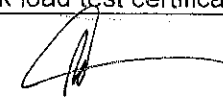
M-2:



M-3:



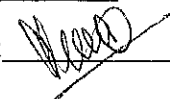
M-4:-



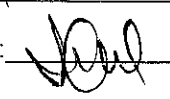
M-5:



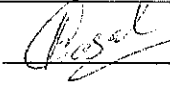
M-6:



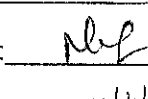
M-7:



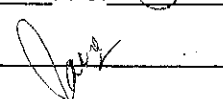
M-8:



M-9:



Co-opted Member:



11/4/14

S/No	Proposed QRs/Specifications	Trial Directive/procedure suggested for trial for Board of Officers
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.
		(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 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.	
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.

i) Check its functionality by operating it from wheel house.  
 Check its functionality by splashing water on the screen.  
 Check its as per approved drawing and check its physically by boarding and disembarkation.  
 Physically check the railing and test for its functionality check materials (marine grade antirust and examine for good quality).  
 Check the rope dia with vernier and length with measuring tape.  
 Check the boat for its functionality.  
 Check the Anchor for quantity and check its functionality during sea trial.  
 Check as per the drawing of the boat.  
 Check the functioning of LMG Post it should cover 180° area.  
 Check physically and count and record and tally with parts catalog of equipment.  
 Check physically its functionality by boarding in the boat.  
 Trial should be carried out, if any other eqpt provided by boat builder.

i) Obtain and check class certificate .  
 ii) Check for location/number.

Check its functionality by loading the boat on the cradle and it must be safe for the Jet boat.

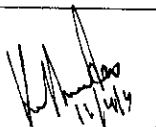





i) Check physically lifting hook and lifting slings. Also check test certificate provided by the builder.  
 ii) Obtain and check class certificate.  
 iii) Check the load test certificate for each fitting.

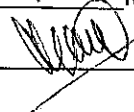
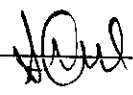
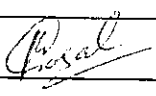

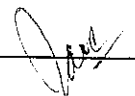
Check the draught mark as per draughting of the boat and measuring it with the help of measuring tape.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
 11/11/14

744 (148)

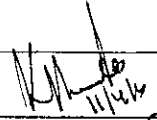


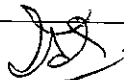
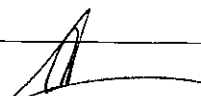

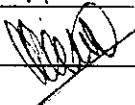
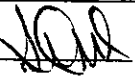
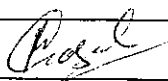

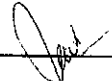
S/No	Proposed QRs/Specifications	Trial Directive/procedure suggested for trial for Board of Officers
39.	Rubber fenders Pneumatic Fenders	(a) Heavy duty "D" type Rubber fenders shall be fitted all round.
		(b) 04 Nos portable pneumatic fenders shall be provided with suitable fixing arrangements.
40.	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.
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 with Sea grey shade.

PO:  M-1:  M-2:  M-3:  M-4:  M-5: 

M-6:  M-7:  M-8:  M-9:  Co-opted Member: 

11/2/14

S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
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 through out 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 <sub>2</sub> of 5 Kgs - 1 No (iii) AFFF of 9 Liters - 2 Nos	i) Layout all the equipments count and record. ii) Check class approved certificate. iii) Check the items for its functionality.
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/LRS/DNV or any other member of IACs. (b) The design and construction of the offered boats are to be approved by IRS/LRS/DNV or any other member of IACs. (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. BSF/CAPF 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 sea grey colour with BSF/CAPF 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, waterjet) Type approval certificate. iv) Life raft, life jacket, fire system/equipment, navigation lights type approval certificate.	(a) Check profile of the firm. (b) Check and obtain class approved certificate. (c) i) Check the manual numbers. ii) Check & count for adequacy /details/drawing. (d) i) Check boat on both side and transom. ii) Check name ID and emblem etc for location and correctness. (e) Check physically the painting scheme. There should be no spots and cracks. (f) Check and obtain the certificate.
46	On Board Spares	Supplier will provide on board spares required for 1500 hours run operation of the Jet Engine and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.	Check quantity and record inventory.


PO:  M-1:  M-2:  M-3:  M-4:  M-5:   
 M-6:  M-7:  M-8:  M-9:  Co-opted Member:   
 11/4/14

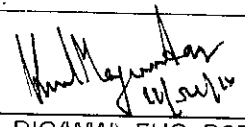
21 10-1  
 (142) (146)

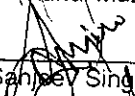
S/No	Proposed QRs/Specifications		Trial Directive/procedure suggested for trial for Board of Officers
47.	Life period	15 years	
48.	Document	Boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.	Check all records,


M-1:   
 (Ravindra Singh Kushwaha), AC, NDRF


M-4 :-   
 (Th B K Singh), AC, SSB


M-7:-   
 (Sub Jagdish Prasad), NSG


PO :-   
 (Kunal Mazumdar), DIG(WW), FHQ, BSF, New Delhi

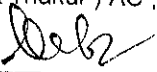
M-2:   
 (Sandeep Singh), DC, CRPF

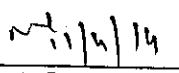
M-5 :-   
 (S K Thakur), DC, Assam Rifle

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

Co-opted Member:-   
 (Ravi Yadav), Surveyor, IRS, New Delhi

M-3:   
 (R K Thakur) AC, ITBP

M-6 :-   
 (Inspr Girija Shankar), CISF

M-9:-   
 (Rajneesh Garg), AC(WW) Rajarhat(SB Ftr)

Approved/Not Approved.

  
 Director General  
 Border Security Force

200  
224

**Appendix -C**

**QUALITATIVE REQUIREMENT /TECHNICAL SPECIFICATION OF AMPHIBIOUS RIGID INFLATABLE BOAT**


**General** - Amphibious Rigid Inflatable Boat is suitable to operate in coastal areas of Gujarat only. All the tools/equipment required for the test/trials are to be provided by the builders.

S/No.	Proposed QRs/Technical Specifications	
<b>PRINCIPAL DIMENSIONS</b>		
01	Length	7 ± 0.2 meter
02	Breadth	2.5 ± 10%
03	Draught	0.40 ± 0. 1 meter
04	Speed on water	30 Knots or more with 08 POB.
05	Speed on Land	08-12 Km/hour
06	Endurance	6 hrs. with 08 POB at 25 Knots speed
07	Compliment	08 persons incl ding crew
08	Fuel	To meet the endurance requirements with 20% reserve.
<b>CONSTRUCTION &amp; MATERIAL</b>		
09.	Sea State	Operate-3, Survival - 04
10.	Hull	The hull shall be constructed by Marine grade Aluminum in accordance with classification society rules.
11.	Collar	Inflatable tube (6-8 chambers, 1500 gsm 1670 dtex hypalon/neoprin IACS certified material) or equivalent.
12.	Materials	(a) High quality marine grade Aluminium shall be used and approved by IRS /Any other IACS.
		(b) All SS Material used in the Deck or any other places should be Main Grade of SS 316.
		(c) All the materials, workmanship and finish shall be of the highest standard / quality.
		(d) To have minimum draught for easy beaching. Bottom should be strengthened for this purpose.
13.	Construction process	Boat to be constructed under approved procedure of IRS or any other International Classification Society & member of IACS.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
11/4/14

(219) (223)

S/No.	Proposed QRs/Technical Specifications	
14.	Propulsion unit & instrumentation	Four stroke OBM of suitable power of a reputed make, long shaft, power trim, power tilt, electric start, EFI to meet the performance requirements. A separate engine of suitable HP to be provided to power the boat while moving on land. The boat shall be provided with 3 or 4 Nos hydraulically / power operated wheels to be used while being driven on land.
15.	Approvals /class certificates	Indian Register of Shipping 'Class certificate' OR equivalent OR any international classification society with relevant rules.
16.	Deck and deck fittings	(a) Anchor & mooring eqpts as per class requirement. (b) Bollard 04 No and Cleats 04 Nos. towing ring is to be provided. (c) Helm/Drivers Console with all engine controls and instrument panel, Steering wheel, Magnetic Compass and Wind Screen to be provided. (d) 04 Nos Lifting hooks to be provided duly reinforced. Load tested 04 Nos lifting sling to be provided.
17.	Life saving equipment	(a) Life jackets for adults-09 Nos to SOLAS rules (b) Life buoys with 30 mtrs rope-02 Nos to SOLAS rules (c) Fire extinguishers : 02 Nos to be provided as per class requirement. (d) Distress alert transponder to be provided.
18.	Additional requirements.	(a) Under seat storage to be catered for. (b) 12 voltage Police siren to be provided. (c) 01 No. Automatic and 01 No. Manual bilge pumps to be provided. (d) 02 Nos Boat hook (e) Collapsible Canopy with S.S Frame. (f) Cushioned seating with back rest for 08 persons including crew with provision of seat belt/ toe strap. (g) Adequate buoyancy to keep the boat afloat with its equipment and passengers in stable condition when flooded. (h) Hold space (Water proof) to be provided for keeping wireless sets and battery at console next to the driver. (i) 12 V Exide maintenance free battery Capable to powered the OBM with provision to recharge through OBM and Placed in secured boxes. (j) Switch board / control box (k) 100 Mtr 12mm and 30 Mtr 16mm thick PP Rope (l) 2 Nos Oars (m) Transportable on conventional trailer with suitable cradles. (n) Set of basic hand tools and a spare propeller should be provided by the boat builders. (o) Galvanized Grapnel type Anchor of suitable weight - 01 No. to be provided (p) Search Light (q) Safety arm rest to all seating positions

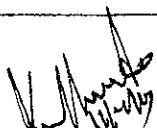





PO: M-1: M-2: M-3: M-4: M-5: M-6: M-7: M-8: M-9: Co-opted Member: 

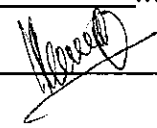
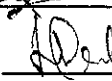
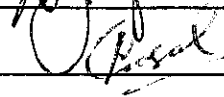

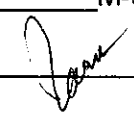
11/4/14




(218) (222)

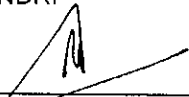
S.No	Proposed QRs/Technical Specifications	
19.	Navigational & electrical fittings	(a) Magnetic compass.
		(b) Two Portable Hand Held Digital GPS with power adapter to be fitted through holder.
		(c) International Light set for Navigation purpose in accordance with IRPCS regulations. Battery backup for navigation light.
		(d) 12 Volt Electric Police siren.
20.	Instrumentation	(a) Speedometer
		(b) Tachometer
		(c) Temperature gauge
		(d) Fuel level indicator
		(e) Tilt / Trim indicator
		(f) Hour gauge
21.	Special instructions/ Guiding Specifications:	1.The firm(s) should be an active manufacturer of Speed boats having works approval of their boat building facilities from IRS/LRS/DNV or any other registered Classification Society.
		2. The design and construction plans of the offered boats are to be approved by IRS/LRS/DNV or other authorized Classification Society.
		3.Two sets of boat 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.
		4. The boats name, ID No. shall be marked at the Aft deck. BSF/CAPF Emblem and Indian national flag to be superimposed or fixed with the laminated stickers in appropriate size on both sides of the hull / suitable place.
		5.The boat shall be painted in Sea grey colour with BSF/CAPF Markings
		6. Following Certificates shall be supplied by the Builder: a) Survey Certificate. b) Builder Certificate.
22	Life Period	08 Years for Amphibious boat 08 years and 800 hrs run for OBM and 08 years for land engine.

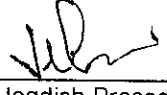
PO:  M-1:  M-2:  M-3:  M-4:  M-5: 

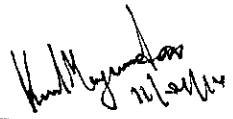
M-6:  M-7:  M-8:  M-9:  Co-opted Member: 

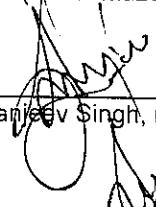
S/No	Proposed QRs/Technical Specifications	
23	Document	Amphibious boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.

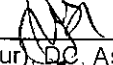
M-1:   
 (Ravindra Singh Kushwaha),  
 AC, NDRF


M-4 :-   
 (Th B K Singh ), AC, SSB


M-7:-   
 (Sub Jagdish Prasad), NSG

PO :   
 (Kunal Mazumdar), DIG(WW) ,FHQ, BSF, New Delhi

M-2:   
 (Sanjeev Singh, DC, CRPF

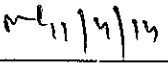
M-5 :-   
 (S K Thakur), DC, Assam Rifle

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

Co-opted Member:-   
 (Ravi Yadav), Surveyor, IRS, New Delhi

M-3:   
 ( R K Thakur ) AC , ITBP

M-6 :-   
 (Inspr Girija Shankar) CISF

M-9:-   
 (Rajneesh Garg ), AC(WW) Rajarhat(SB Ftr)

Approved/Not Approved.

  
 Director General  
 Border Security Force

226 230

**Appendix -B**

**TRIAL DIRECTIVE FOR CARRYING OUT TRIAL EVALUATION AS PER THE QRS OF AMPHIBIOUS RIGID INFLATABLE BOAT**

**General** - Amphibious Rigid Inflatable Boat is suitable to operate in coastal areas of Gujarat only. All the tools/equipment required for the test/trials are to be provided by the builders.

S/No.	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
<b>PRINCIPAL DIMENSIONS</b>			
01	Length	7 ± 0.2 meter	Check with measuring tape in calm water and tally with approved drawing. Check line plan and general drawing in addition to physical checking.
02	Breadth	2.5 ± 10%	Check with measuring tape in calm water and tally with approved drawing. Check line plan and general drawing in addition to physical checking.
03	Draught	0.40 ± 0. 1 meter	Check with measuring tape after loading the boat with 08 pers with all equipments @ 80kg per person and tally with drawing. Check line plan and general drawing in addition to physical checking.
04	Speed on water	30 Knots or more with 08 POB.	To be physically checked after loading the boat with 08 pers with all equipments @ 80kg per person during sea trial with the help of GPS. Also by the formula- speed = distance travel \time taken. Speed trail on water be undertaken with and against the tide with standard procedure.
05	Speed on Land	08-12 Km/hour	To be physically checked after loading the boat with 08 pers with all equipments @ 80kg per person during land trial with the help of GPS. Also by the formula – Speed = distance trial/time taken.
06	Endurance	6 hrs. with 08 POB at 25 Knots speed	Range/Endurance trial to be carried out on average basis for 01 hour with 08 pers alongwith all equipments @ 80 kg per person during sea trial with the help of GPS.
07	Compliment	08 persons including crew	Physically check with 08 pers with all equipments in the boat comfortably.
08	Fuel	To meet the endurance requirements with 20% reserve.	Fuel consumption to be checked on average basis for 01 hour during sea trial alongwith 08 pers with all equipments with the help of stop watch.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]  
 11/4/11

S/No.	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
<b>CONSTRUCTION &amp; MATERIAL</b>			
09.	Sea State	Operate-3, Survival – 04	The boat builder will provide drawing of the boat duly approved by the class society mentioning that boat will operate in sea state -3 conditions and have survivability upto sea state -4. Boat builder will also provide trim and stability booklet duly approved by class society.
10.	Hull	The hull shall be constructed by Marine grade Aluminum in accordance with classification society rules.	To be checked by Class Society and certificate to this effect be obtained by boat builder.
11.	Collar	Inflatable tube (6-8 chambers, 1500 gsm 1670 dtex hypalon/neoprin IACS certified material) or equivalent.	Boat Builder will provide drawing of the boat duly approved by class society. Check the inflatable tube for any leakage by applying soap water on the tube. If bubbles comes there must be a leakage.
12.	Materials	(a) High quality marine grade Aluminium shall be used and approved by IRS /Any other IACS.	a) Physically examination to the carried out in the presence of class rep as per class approved plan.
		(b) All SS Material used in the Deck or any other places should be Main Grade of SS 316.	a) Physically examination to the carried out in the presence of class rep as per class approved plan.
		(c) All the materials, workmanship and finish shall be of the highest standard / quality.	a) Physically examination to the carried out in the presence of class rep as per class approved plan.
		(d) To have minimum draught for easy beaching. Bottom should be strengthened for this purpose.	a) Physically examination to the carried out in the presence of class rep as per class approved plan.
13.	Construction process	Boat to be constructed under approved procedure of IRS or any other International Classification Society & member of IACS.	Boat builder to be provided necessary certificate to this effect.
14.	Propulsion unit & instrumentation	Four stroke OBM of suitable power of a reputed make, long shaft, power trim, power tilt, electric start, EFI to meet the performance requirements.	Physically check the OBM and engine as per certificate provided by the builder.
		A separate engine of suitable HP to be provided to power the boat while moving on land. The boat shall be provided with 3 or 4 Nos hydraulically / power operated wheels to be used while being driven on land.	The trial of boat will carried out for one hour each in water & land and check the parameter of both engine within the limits recommended by OEM.
15.	Approvals /class certificates	Indian Register of Shipping 'Class certificate' OR equivalent OR any international classification society with relevant rules.	Boat builder to be provided necessary certificate to this effect.

PO:



M-1:



M-2:



M-3:



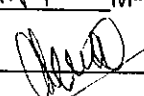
M-4:-



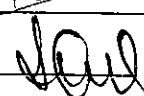
M-5:



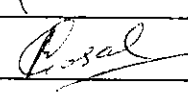
M-6:



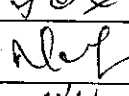
M-7:



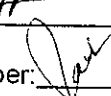
M-8:



M-9:



Co-opted Member:



11/4/14

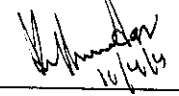


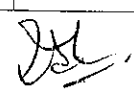
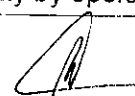

(224) (228)

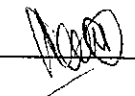
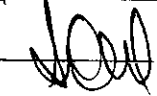
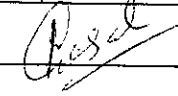
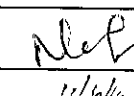
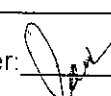
S/No.	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
16.	Deck and deck fittings	(a) Anchor & mooring eqpts as per class requirement.
		(b) Bollard 04 Nos and Cleats 04 Nos. towing ring is to be provided.
		(c) Helm/Drivers Console with all engine controls and instrument panel, Steering wheel, Magnetic Compass and Wind Screen to be provided.
		(d) 04 Nos Lifting hooks to be provided duly reinforced. Load tested 04 Nos lifting sling to be provided.
17.	Life saving equipment	(a) Life jackets for adults-09 Nos to SOLAS rules
		(b) Life buoys with 30 mtrs rope-02 Nos to SOLAS rules
		c) Fire extinguishers : 02 Nos to be provided as per class requirement.
		d) Distress alert transponder to be provided.
18.	Additional requirements.	(a) Under seat storage to be catered for.
		(b) 12 voltage Police siren to be provided.
		(c) 01 No. Automatic and 01 No. Manual bilge pumps to be provided.
		(d) 02 Nos Boat hook
		(e) Collapsible Canopy with S.S Frame.
		(f) Cushioned seating with back rest for 08 persons including crew with provision of seat belt/ toe strap.
		(g) Adequate buoyancy to keep the boat afloat with its equipment and passengers in stable condition when flooded.

PO: [Signature] 11/4/14 M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] 11/4/14 Co-opted Member: [Signature]

223  
227

S/No	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
	(h) Hold space (Water proof) to be provided for keeping wireless sets and battery at console next to the driver.	Check physically by placing battery and wireless sets in the place on board provided by the builders.
	(i) 12 V Exide maintenance free battery Capable to powered the OBM with provision to recharge through OBM and Placed in secured boxes.	i) Battery to be checked with the help of hydrometer to check the gravity i.e. 1250 -- 1280 in full charge. ii) Check the battery for any cracks and leakage.
	(j) Switch board / control box	i) Check the switch box/control box for each functionality while boat is running . ii) Check all fitments are as per drawing of the boat..
	(k) 100 Mtr 12mm and 30 Mtr 16mm thick PP Rope	Check the rope diameter by vernier and length with measuring tape.
	(l) 2 Nos Oars	Check, count & record.
	(m) Transportable on conventional trailer with suitable cradles.	Check the cradle for its functionality and strength . It should be capable of taking load of the boat and provide solid support to the boat.
	(n) Set of basic hand tools and a spare propeller should be provided by the boat builders.	Check and count tools and also operate tools on engine/equipment for testing its functionality.
	(o) Galvanized Grapnel type Anchor of suitable weight - 01 No. to be provided	Check its functionality by dropping in water during sea trial.
	(p) Search Light	Test the search light for its illumination and focus for at least 10 times.
	(q) Safety arm rest to all seating positions	Check physically the safety arm rest by sitting in the boat.
19.	19. Navigational & electrical fittings	
	(a) Magnetic compass.	Check the magnetic compass for its functionality and check its correctness with GPS.
	(b) Two Portable Hand Held Digital GPS with power adapter to be fitted through holder.	Switch on GPS and get the data. Also switch on the other GPS and verify that the GPS position data is being received correctly.
	(c) International Light set for Navigation purpose in accordance with IRPCS regulations. Battery backup for navigation light.	Check the class certificate & check the functionality of navigation light on deck physically by switching ON and OFF 10 to 15 times. Check type approved certificate.
	(d) 12 Volt Electric Police siren.	Check its functionality by operating 10 - 15 times.

PO:  11/4/19 M-1:  M-2:  M-3:  M-4:  M-5: 

M-6:  M-7:  M-8:  M-9:  11/4/19 Co-opted Member: 

222 226

S/No.	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
20.	Instrumentation (a) Speedometer	Check during trial whether it is working and giving correct reading.
	(b) Tachometer	Check during trial whether it is working and giving correct reading.
	(c) Temperature gauge	Check during trial whether it is working and giving correct reading.
	(d) Fuel level indicator	Check during trial whether it is working and giving correct reading.
	(e) Tilt / Trim indicator	Check during trial whether it is working and giving correct reading.
	(f) Hour gauge	Check during trial whether it is working and giving correct reading.
21.	Special instructions/ Guiding Specifications:	
	1. The firm(s) should be an active manufacturer of Speed boats having works approval of their boat building facilities from IRS/LRS/DNV or any other registered Classification Society.	Check profile of the firm.
	2. The design and construction plans of the offered boats are to be approved by IRS/LRS/DNV or other authorized Classification Society.	Check the design and construction as per drawing and obtains class approved certificate.
	3. Two sets of boat 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.	i) Check manual for numbers. ii) Check contents for adequacy/details /drawing.
	4. The boats name, ID No. shall be marked at the Aft deck. BSF/CAPF Emblem and Indian national flag to be superimposed or fixed with the laminated stickers in appropriate size on both sides of the hull / suitable place.	Check physically for its correctness.
	5. The boat shall be painted in Sea grey colour with BSF/CAPF Markings	i) Check physically the painting of the boat. It should be as per painting scheme of IRS and builder will provide certificate to this effect. ii) There should be no cracks and spots in the paint.
6. Following Certificates shall be supplied by the Builder: a) Survey Certificate. b) Builder Certificate.	Check the certificates physically.	

PO:

M-1:

M-2:

M-3:

M-4:-

M-5:

M-6:

M-7:

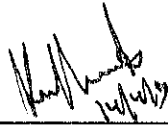
M-8:


M-9:

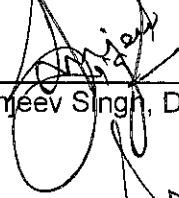
Co-opted Member:


Amphibious Boat  
 (221) 225

Sl. No.	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
22	Life Period 08 Years for Amphibious boat 08 years and 800 hrs run for OBM and 08 years for land engine.	-
23	Document Amphibious boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.	Check all records,


PO :-   
 (Kunal Mazumdar), DIG(WW), FHQ, BSF, New Delhi

M-1:   
 (Ravindra Singh Kushwaha),  
 AC, NDRF


M-2:   
 (Sanjeev Singh), DC, CRPF

M-3:   
 (R K Thakur) AC, ITBP

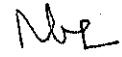
M-4 :-   
 (Th B K Singh), AC, SSB


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

M-6 :-   
 (Inspr Girija Shankar), CISF

M-7:-   
 (Sub Jagdish Prasad), NSG

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

M-9:-   
 (Rajneesh Garg), AC(WW) Rajarhat(SB Ftr)

Co-opted Member:-   
 (Ravi Yadav), Surveyor, IRS, New Delhi

Approved/Not Approved.

  
 Director General  
 Border Security Force



176 174

**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 20 MTRS LONG STEEL BOAT**

**General :-**

1. The craft should be capable of operating in the area of Assam.
2. All machinery and equipment should have ease of operation and low maintenance requirement.
3. The craft shall be designed and built under class approved with appropriate class notation.
4. The craft to be fully complied with MARPOL and SOLAS regulations as applicable.
5. Build standard as per IRS/equivalent specifications. Materials for pipes, valves, pumps etc in accordance with Classification Society rules and to have cathodic protection to metallic components.
6. Good intact and stability, damage survivability standards conforming to ISO 12217/as per class rules.
7. Have an expected life of 15 yrs.
8. All the tools/equpts required for the test/trials are to be provided by the builders.

S/No	Proposed QRs/Technical Specifications	
01.	Length	20 Mtrs±10%
02.	Breadth	5 Mtrs±10%
03.	Speed	12 knots at full load
04.	Draught	Not exceeding 0.75 Mtrs
05.	Complement	20 pers including crew.
06.	Hull	Steel (As per class required)
07.	Stability	a) The vessel has adequate intact stability in all operating conditions. b) The vessel also has one compartment damage stability. It shall not capsize in the event of flooding of the largest compartment i.e. machinery space. c) Stability booklet, as applicable to the passenger vessel, to be approved by the Class. d) Vessel will capable to operate in sea state 3 and survivability upto sea state 4.
08.	Engine	Suitable HP Marine Engine of reputed make approved by class having Annual Exploitation not less than 1500 hrs @ 10 knots at full load
09.	Gear Box	Suitable hydraulic gear box class approved matching the operating profile of engine to meet the endurance criteria with 20% reserve
10.	Fuel capacity	oil To meet the endurance criteria with 20% reserve.
11.	Fresh water capacity	1500 ltrs X 2

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

169 173

S/No	Proposed QRs/Technical Specifications	
12.	Endurance	Not less than 72 hrs with 20 personnel, 3000 liters fresh water, 3000 liters fuel on board for engine operations with average speed of 10 to 12 knots. The fuel oil filling arrangement shall be flush deck type with watertight screwed for filling the tanks. The tanks shall be fitted necessary filling connections i.e a fuel filling strainer and external wire gauge strainer, a shut off cock. The filler cap secured by a non ferrous chain. The vent- pipes shall terminate in atmosphere and the positioned with a NRV to avoid ingress of rain water or spray.
13.	Anchor	02 Nos hand mechanical anchor with 100 Mtrs rope as per class requirement.
14.	Propulsion	(a) Twin marine inboard diesel engines class approved driving fixed pitch propellers suitable for low draught operation. (b) Electrical starting system of main Engines by battery. (c) Electronic Control and monitoring system for engine, gear box. (d) Control of main engine and gear system are from wheel house through remote.
15.	Damage control and fire fighting	Provision of fire fighting as per class requirement.
16.	Life saving appliances	In accordance with SOLAS/Class requirements. (a) 22 Nos life jackets and 08 Nos life buoys (b) Fire fighting appliances as per class rules shall be provided. (c) Structural fire protection to be provided as per Class requirements. (d) One 20 men life raft to be provided.
17.	Cabins	(a) One cabin for two officers fitted with room AC with attached toilet. (b) One cabin for two SOs with attached toilet. (c) Dormitory accommodation for 16 pers with two toilet facility. (d) Arrangement for sitting 16 personnel for operational duties. (e) Common dining space for crew. (f) Officer dining area. (g) All loose gear in cabins should have securing arrangements.
18.	Railing	Railing to be arranged according general arrangement of antirust materials.
19.	Cathodic protection.	Suitable anodes to be fitted on the hull, sea chest and other appropriate places for 18 months of continuous service.

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]


(168) (172)


Sl. No.	Proposed QRs/Technical Specifications	
20.	Navigation equipments	(a) Mounted GPS (Global Positioning System) (b) ECO Sounder (c) Magnetic Compass (Liquid) mounted type (d) Barometer (e) Navigation lights to be in accordance with IRPCS requirements, as applicable. (f) Siren/Horn (electrical) as per IRPCS requirement. (g) HF Trans-receiver-1 (h) Portable VHF Trans-receiver-2 (i) Search light for 360° coverage of 1200 watt with xenon lamp (minimum 3 NM range) (j) Mounted trainable loud hailer (50w) with PA Facility. (k) Window wiper/clear view screen (l) Intercom fitted with master cabin, engine room, Officers cabin and SOs cabin/Dormitory (m) All navigational and sound equipments should have power backup.
21.	LMG Mounting	Provision of fitment of LMG stand be made on the forward deck and aft deck.
22.	Power	"Two 230V, 1 Phase AC 50Hz Diesel Generators class approved type for marine application of suitable capacity with a growth margin of minimum 10% to be installed for providing power supply to the boat. Each generator should be capable to take the load of the craft. One will be in use while the other one on standby".  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 location for 12/24V DC and/230V AC. Provision for 24 VDC emergency light to be provided in all compartments with suitable battery charger.
23.	Galley	(a) Common galley with required accessories like hot plate (rails on side of hot plate), stainless washbasin, tea/coffee maker, microwave oven, food processor, electric rice cooker, water purifier and storage rack etc (b) Complete set of cutlery and accessories as per compliment to be provided. (c) Refrigerator 250-300 Ltr capacity – 01 No. (d) Water cooler stainless steel, storage & cooling cap.-20ltrs of reputed make- 01 No Securing arrangement for all galley equipments, crockery, refrigerator and water cooler.

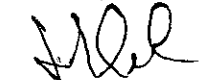
PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
 M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

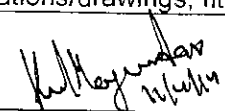
167 171

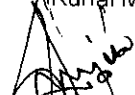
S/No	Proposed QRs/Technical Specifications	
24.	Special instructions/ guiding specifications	(a) Two sets of boat manuals having details of operations, maintenance and detailed drawing to be provided by the builder to the owner/owner's representative at the time delivery of boats. (b) The boats name, ID No. to be fixed in console. (c) The boats shall be painted in sea grey colour. (d) Following Certificates shall be supplied by the Builder:- i) Class Certificate ii) Builder Certificate
25.	On Board Spares	Supplier will provide on board spares required for 1500 hours run operation of the steel boat and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.
26.	Document	Steel boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.

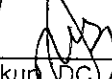
M-1:   
(Ravindra Singh Kushwaha),  
AC, NDRF

M-4 :-   
(Th B K Singh), AC, SSB


M-7:-   
(Sub Jagdish Prasad), NSG

PO :-   
(Kunal Mazumdar), DIG(WW), FHQ, BSF, New Delhi

M-2:   
(Sanjeev Singh, DC, CRPF)

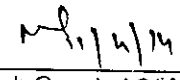
M-5 :-   
(S K Thakur, DC) Assam Rifle

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

Co-opted Member:-   
(Ravi Yadav), Surveyor, IRS, New Delhi

M-3:   
(R K Thakur) AC, ITBP

M-6 :-   
(Inspr Girija Shankar), CISF

M-9:-   
(Rajneesh Garg), AC(WW) Rajarhat(SB Ftr)

✓ Approved/Not Approved.

  
Director General  
Border Security Force

**TRIAL DIRECTIVE FOR CARRYING OUT TRIAL EVALUATION AS PER THE QRS OF 20 MTRS LONG STEEL BOAT****General :-**

1. The craft should be capable of operating in the area of Assam.
2. All machinery and equipment should have ease of operation and low maintenance requirement.
3. The craft shall be designed and built under class approved with appropriate class notation.
4. The craft to be fully complied with MARPOL and SOLAS regulations as applicable.
5. Build standard as per IRS/equivalent specifications. Materials for pipes, valves, pumps etc in accordance with Classification Society rules and to have cathodic protection to metallic components.
6. Good intact and stability, damage survivability standards conforming to ISO 12217/as per class rules.
7. Have an expected life of 15 yrs.
8. All the tools/equpts required for the test/trials are to be provided by the builders.

S/No	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
01.	Length	20 Mtrs±10%	Check with measuring tape in clam water and tally with approved drawings. Check line plan and general arrangement drawing in addition to physical checking.
02.	Breadth	5 Mtrs±10%	Check with measuring tape in clam water and tally with approved drawings. Check line plan and general arrangement drawing in addition to physical checking.
03.	Speed	12 knots at full load	To be physically checked in calm water with GPS during water trial by the formula:- Speed = distance travel/time taken The speed trial will be conducted at specified full load and considering the effect of tide i.e. with and against the tide /current in accordance with standard procedures.
04.	Draught	Not exceeding 0.75 Mtrs	Check draught marking marked by the builder on full load. It must be below .75 Mtrs.
05.	Complement	20 pers including crew.	To be physically checked.
06.	Hull	Steel (As per class required)	Thickness of the sheet will be checked as per approved drawing with the help of thickness gauge and obtain materials test certificate from builder.

PO: \_\_\_\_\_

M-1: \_\_\_\_\_

M-2: \_\_\_\_\_

M-3: \_\_\_\_\_

M-4: \_\_\_\_\_

M-5: \_\_\_\_\_

M-6: \_\_\_\_\_

M-7: \_\_\_\_\_

M-8: \_\_\_\_\_

M-9: \_\_\_\_\_

Co-opted Member: \_\_\_\_\_

11/4/14

(176) (180)

S/No	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
07.	Stability	a) The vessel has adequate intact stability in all operating conditions. b) The vessel also has one compartment damage stability. It shall not capsize in the event of flooding of the largest compartment i.e. machinery space. c) Stability booklet, as applicable to the passenger vessel, to be approved by the Class. d) Vessel will capable to operate in sea state 3 and survivability upto sea state 4.	a) Boat builder will provide trim and stability booklet duly approved by Class Society.  b) Inclining expirment will be carried out by class society in presence of BSF/CAPF officials in calm water.
08.	Engine	Suitable HP Marine Engine of reputed make approved by class having Annual Exploitation not less than 1500 hrs @ 10 knots at full load	(a) Type approved certificate issued by Class to be provided by the boat builder. (b) Engine performance trial to be conducted by running on various RPMs for one hour continuously. All parameters of engine must be in normal limits specified by the engine manufacturers. This trial will be done twice after interval of half hour.
09.	Gear Box	Suitable hydraulic gear box class approved matching the operating profile of engine to meet the endurance criteria with 20% reserve	(a) Type approved certificate issued by class to be provided by the boat builder. (b) Gear Box performance trial to be conducted by running on various RPMs for one hour continuously. All parameters of engine must be in normal limits specified by OEMs. This trial will be done twice after interval of half hour.
10.	Fuel oil capacity	To meet the endurance criteria with 20% reserve.	Specified fuel oil capacity will be checked by filling the tank with measured volume of fuel.
11.	Fresh water capacity	1500 ltrs X 2	(i) Check tank. (ii) Empty the tank. (iii) Fill each tank with measured volum of (1500 Ltrs.) of water. iv) Check the air pressure test of tank.

PO:

*[Signature]*  
11/4/14

M-1:

*[Signature]*

M-2:

*[Signature]*

M-3:-

*[Signature]*

M-4:

*[Signature]*

M-5:

*[Signature]*

M-6:

*[Signature]*

M-7:

*[Signature]*

M-8:

*[Signature]*

M-9:

*[Signature]*  
11/4/14

Co-opted Member:

*[Signature]*

175 (179)

S/No	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
12.	<b>Endurance</b>	Not less than 72 hrs with 20 personnel, 3000 liters fresh water, 3000 liters fuel on board for engine operations with average speed of 10 to 12 knots. The fuel oil filling arrangement shall be flush deck type with watertight screwed for filling the tanks. The tanks shall be fitted necessary filling connections i.e a fuel filling strainer and external wire gauge strainer, a shut off cock. The filler cap secured by a non ferrous chain. The vent- pipes shall terminate in atmosphere and the positioned with a NRV to avoid ingress of rain water or spray.	Trial to be carried out for 4.5 hrs@ 12 knots with full load (man & materials with eqpts) during sea trial (favour & against the current) distance travelled & fuel consumed to be recorded. Check & calculate fuel tank capacity meets endurance requirements
13.	Anchor	02 Nos hand mechanical anchor with 100 Mtrs rope as per class requirement.	Obtain and check class approved. In case of any doubt, the same be verified from concerned agency.
14.	Propulsion	(a) Twin marine inboard diesel engines class approved driving fixed pitch propellers suitable for low draught operation. (b) Electrical starting system of main Engines by battery. (c) Electronic Control and monitoring system for engine, gear box. (d) Control of main engine and gear system are from wheel house through remote.	During performance trial of engine and gear box check all electronic and monitoring systems are properly working in the permissible range specified by the OEMs.
15.	Damage control and fire fighting	Provision of fire fighting as per class requirement.	Check lines plan and general arrangement drawings and compare by physical checking.
16.	Life saving appliances	In accordance with SOLAS/Class requirements.	i) Layout all the eqpts and count.
		(a) 22 Nos life jackets and 08 Nos life buoys	ii) Check class approved certificate.
		(b) Fire fighting appliances as per class rules shall be provided.	Check and count the fire fighting appliances as per drawing, also check its functionality.
		(c) Structural fire protection to be provided as per Class requirements.	Check its functionality by starting fire pump and fire hoses.
	(d) One 20 men life raft to be provided.	Check type approved certificate, servicing certificate and date of expiry of life raft.	

PO: [Signature] M-1: [Signature] M-2: [Signature] M-3:- [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]

174 178

S/No	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
17.	Cabins	(a) One cabin for two officers fitted with room AC with attached toilet.	Check every equipment fitted in the Officer's cabin like air conditioner, fans, light arrangements, toilet fittings for its functionality.
		(b) One cabin for two SOs with attached toilet.	Check every equipment fitted in the SO'S cabin like fans, light arrangements, toilet fittings for its functionality.
		(c) Dormitory accommodation for 16 pers with two toilet facility.	Check every equipment fitted in the dormitory like fans, light arrangements, toilet fittings for its functionality
		(d) Arrangement for sitting 16 personnel for operational duties.	To check with 16 personnel seating with all equipments in the boat comfortably in calm water.
		(e) Common dining space for crew.	To check with 16 personnel seating in dining space comfortably.
		(f) Officer dining area.	To check with 04 Officers seating in dining area comfortably.
		(g) All loose gear in cabins should have securing arrangements.	Check securing arrangement of all loose gears.
18.	Railing	Railing to be arranged according general arrangement of antirust materials.	Check physically, the builder will provide test certificate of the materials.
19.	Cathodic protection.	Suitable anodes to be fitted on the hull, sea chest and other appropriate places for 18 months of continuous service.	To be physically examined. Certificate to be provided by the boat builder.
20.	Navigation equipments	(a) Mounted GPS (Global Positioning System)	i) Check for power supply from boat within the rated range. ii) Check for connection between antenna and display unit. iii) Check for cable routing and connection as per drawing. iv) switch on GPS and get the data. Also switch on the other GPS and verify that the GPS position data is being received correctly.
		(b) ECO Sounder	i) Check the power supply from boat within the rated range. ii) Check for connection between transducer unit and display unit. iii) Check for cable routing and connection as per drawing. iv) Switch on the ECO sounder get the data. Also take the water depth manually with the help of lead line and verify the depth shown by the ECO Sounder. v) Power out put and receiver sensitivity as per OEM manual are to be checked and recorded. vi) Echo sounder calibration certificate to be checked.

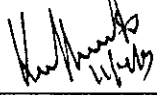
PO: [Signature] M-1: [Signature] M-2: [Signature] M-3: [Signature] M-4: [Signature] M-5: [Signature]  
M-6: [Signature] M-7: [Signature] M-8: [Signature] M-9: [Signature] Co-opted Member: [Signature]



(173) (177)

S. No	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
	c) Magnetic Compass (Liquid) mounted type	i) Check the liquid magnetic compass as per OEM specification. ii) Check its functionality. Check accuracy with the help of GPS. iii) Check compass swing and compare with GPS.
	d) Barometer	i) Check the barometer as per OEM specification. ii) Check its functionality and the accuracy with another barometer. iii) Check barometer calibration certificate.
	e) Navigation lights to be in accordance with IRPCS requirements, as applicable.	Check the class certificate & check the functionality of navigation light on deck physically by switching ON and OFF 10 to 15 times.
	f) Siren/Horn (electrical) as per IRPCS requirement.	Check the functionality of siren/horn on deck physically by switch ON and OFF 15 times.
	g) HF Trans-receiver-1	Check the equipment, OEM manual and frequencies test the equipments by communicated with other similar equipment and ascertain whether the same is functional.
	h) Portable VHF Trans-receiver-2	Check the equipment, OEM manual and frequencies test the equipments by communicated with other similar equipment and ascertain whether the same is functional.
	i) Search light for 360° coverage of 1200 watt with xenon lamp (minimum 3 NM range)	i) Check the power supply from boat within the rated range. ii) Check the movement by revolving search light handle 360° from wheel house. iii) Check its functionality in night wether its focus is correct or otherwise.
	j) Mounted trainable loud hailer (50w) with PA Facility.	i) Check the power supply from boat within the rated range. (ii) Physically Check its functionality on the boat.
	k) Window wiper/clear view screen	i) Check the power supply from boat within the rated range. ii) Check its functionality physically by splashing water on the screen.
	l) Intercom fitted with master cabin, engine room, Officers cabin and SOs cabin/Dormitory	Check its functionality by making calls from Master Cabin, engine room, Officer's cabin, SO'S cabin and dormitory..
	m) All navigational and sound equipments should have power backup.	Check power backup for navigation and sound equipments.
21.	LMG Mounting Provision of fitment of LMG stand be made on the forward deck and aft deck.	Check for its functionality whether it is revolving 180°.

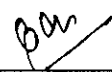
PO:



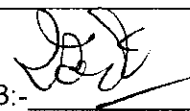
M-1:



M-2:



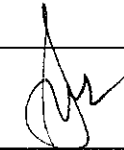
M-3:-



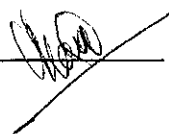
M-4:



M-5:



M-6:



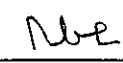
M-7:



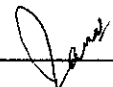
M-8:



M-9:



Co-opted Member:





S/No	Proposed QRs/Technical Specifications	Trial Directive/procedure suggested for trial for Board of Officers
22.	<p>Power</p> <p>"Two 230V, 1 Phase AC 50Hz Diesel Generators class approved type for marine application of suitable capacity with a growth margin of minimum 10% to be installed for providing power supply to the boat. Each generator should be capable to take the load of the craft. One will be in use while the other one on standby".</p> <p>Load analysis chart justifying the capacities of the power supply source to be provided before finalizing the capacity of the generator.</p> <p>Single Line Schematic Diagram showing details of Power generation and distribution is to be provided.</p> <p>Sockets are to be provided at appropriate location for 12/24V DC and/230V AC.</p> <p>Provision for 24 VDC emergency light to be provided in all compartments with suitable battery charger.</p>	<p>(a) Type approved certificate to be provided by the boat builder.</p> <p>(b) DG Set performance trial to be conducted by running for one hour continuously on full load. All parameters of DG Set must be in normal limits specified by the DG Set manufacturers. This trial will be done twice after interval of half hour.</p>
23.	<p>Galley</p> <p>(a) Common galley with required accessories like hot plate (rails on side of hot plate), stainless washbasin, tea/coffee maker, microwave oven, food processor, electric rice cooker, water purifier and storage rack etc.</p> <p>(b) Complete set of cutlery and accessories as per compliment to be provided.</p> <p>(c) Refrigerator 250-300 Ltr capacity – 01 No.</p> <p>(d) Water cooler stainless steel, storage &amp; cooling cap.-20ltrs of reputed make- 01 No</p> <p>Securing arrangement for all galley equipments, crockery, refrigerator and water cooler.</p>	<p>Check all equipments for its functionality.</p> <p>Check and count all cutlery and accessories as per ship inventory.</p> <p>Check refrigerator and water cooler for their functionality for one hour. Cooling should be adequate.</p> <p>Securing arrangement for all portable gear to be checked.</p>
24.	<p>Special instructions/ guiding specifications</p> <p>(a) Two sets of boat manuals having details of operations, maintenance and detailed drawing to be provided by the builder to the owner/owner's representative at the time delivery of boats.</p> <p>(b) The boats name, ID No. to be fixed in console.</p> <p>(c) The boats shall be painted in sea grey colour.</p>	<p>i) Check manual for numbers.</p> <p>ii) Check contents for adequacy/details /drawing.</p> <p>Check physically for its correctness.</p> <p>i) Check physically the painting of the boat. It should be as per painting scheme of IRS and builder will provide certificate to this effect.</p> <p>ii) There should be no cracks and spots in the paint.</p>


PO: M-1: M-2: M-3:- M-4: M-5: M-6: M-7: M-8: M-9: Co-opted Member: 

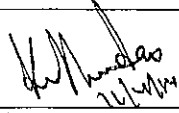
(177) (175)

S/No	Proposed QRs/Technical Specifications		Trial Directive/procedure suggested for trial for Board of Officers
		(d) Following Certificates shall be supplied by the Builder:- i) Class Certificate ii) Builder Certificate	Check the certificates physically.
25	On Board Spares	Supplier will provide on board spares required for 1500 hours run operation of the steel boat and Generator as per OEM recommendations. List of on board spares to be furnished by the supplier in the tender documents.	Check quantity and record inventory.
26.	Document	Steel boat should be supplied with documentations/drawings, fitted equipment details and Boat data Book.	Check all records,

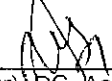
M-1:   
(Ravindra Singh Kushwaha),  
AC, NDRF

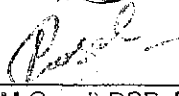
M-4 :-   
(Th B K Singh), AC, SSB

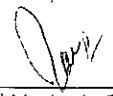
M-7:-   
(Sub Jagdish Prasad), NSG

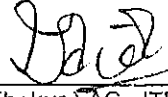
PO :-   
(Kunal Mazumdar), DIG(WW), FHQ, BSF, New Delhi

M-2:   
(Sanjeev Singh), DC, CRPF

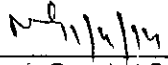
M-5 :-   
(S K Thakur), DC, Assam Rifle

M-8:-   
(Dr. M M Gosai) DSP, BPR&D

Co-opted Member:-   
(Ravi Yadav), Surveyor, IRS, New Delhi

M-3:   
(R K Thakur) AC, ITBP

M-6 :-   
(Insp'r Girija Shankar), CISF

M-9:-   
(Rajneesh Garg), AC(WW) Rajarhat(SB Ftr)

Approved/Not Approved.

  
Director General  
Border Security Force