

संख्या. पी-63013/219/01/2025/मोड-1/सीसुबल 124-27

भारत सरकार, गृह मंत्रालय
महानिदेशालय सीमा सुरक्षा बल
(रसद निदेशालय: आधुनिकीकरण सैल)
(Email-comdtord@bsf.nic.in)
(Fax: 011-24367683)

ब्लाक संख्या . 10,
सीजीओ काम्पलेक्स,
लोधी रोड, नई दिल्ली-03
दिनांक 14 जनवरी 2025

वरिष्ठ तकनीकी निदेशक
The Senior Technical Director
राष्ट्रीय सूचना-विज्ञान केन्द्र, नोर्थ ब्लॉक,
गृह मंत्रालय, नई दिल्ली
NIC, North Block, MHA
New Delhi
(द्वारा ई-मेल)
(ई-मेल पता : mpsugandhi@nic.in)

Sub: **Request for comments of stakeholders/OEM on draft QRs & TDs.**

कृपया गृह मंत्रालय के पत्र संख्या IV-24011/12/2011-Prov-I(part)(CFN 3300890)-1710 दिनांक 31 अगस्त 2015 के सन्दर्भ में।

2. उपरोक्त विषयान्तर्गत यह सूचित किया जाता है कि तकनीकी विशेषज्ञों के उप समूह द्वारा "High Performance Fast Patrol Craft" गुणात्मक आवश्यकता/परीक्षण निर्देशों का प्रारूप दिनांक 12 जनवरी 2026 को आयोजित सभा के दौरान तैयार किया गया था जिसको इस आशय से प्रेषित किया जा रहा है कि उक्त गुणात्मक आवश्यकता/परीक्षण निर्देश को गृह मंत्रालय की वेबसाइट पर 15 दिन के लिए अपलोड करने का श्रम करें।

संलग्न : उपरोक्तनुसार

कपिल चाहर
(कपिल चाहर)

उप कमाण्डेंट (मोड)

प्रतिलिपि :-

1. SO (IT), North Block, MHA
(Through E-mail)
(E-mail address: soit@nic.in) : उपरोक्त समस्त गुणात्मक आवश्यकता का मसौदा आपके सूचनार्थ एवं अग्रिम कार्यवाही हेतु।
2. IT Wing, FHQ BSF : उपरोक्त उक्त गुणात्मक आवश्यकता का मसौदे को सीमा सुरक्षा बल की वेबसाइट पर 15 दिन के लिए अपलोड करने का श्रम करें। आपसे अनुरोध है कि उक्त मसौदे को गृह मंत्रालय की वेबसाइट पर भी अपलोड करने हेतु निम्नलिखित पतों पर ई-मेल करने का श्रम करें:-
(a) Technical Director, NIC, North Block, MHA
(E-mail : mpsugandhi@nic.in)
(b) SO (IT), North Block, MHA
(E-mail : soit@nic.in)
3. Prov Dte (Water Wing), BSF
2nd Floor, "F" Wing, Nirman
Bhawan, New Delhi. : For info w.r.t their letter No.1354 dated 31 Oct 2025.

भारत सरकार, गृह मंत्रालय
महानिदेशालय सीमा सुरक्षा बल
(रसद निदेशालय: आधुनिकीकरण सैल)
ब्लाक संख्या . 10, सीजीओ काम्पलेक्स, लोधी रोड, नई दिल्ली-03
(Email-comdtord@bsf.nic.in)
(Fax: 011-24367683)

संख्या. पी-63013/219/01/2025/मोड-1/सीसुबल/

दिनांक ____ जनवरी 2026

विषय : "High Performance Fast Patrol Craft" के सूत्रीकरण गुणात्मक आवश्यकता/परीक्षण निर्देशों पर हितधारकों/निर्माताओं/विक्रेताओं की टिप्पणी के लिए अनुरोध।

1. **"High Performance Fast Patrol Craft" के सूत्रीकरण गुणात्मक आवश्यकता और परीक्षण निर्देशों को परिशिष्ट 'ए' के रूप में संलग्न किया गया है।** हितधारकों/निर्माताओं/विक्रेताओं से अनुरोध किया जाता है कि वे उस उत्पाद की विस्तृत एवं स्टीक जानकारी दें। साथ ही प्रत्येक पैरामीटर के अनुरूप अपने उत्पाद के सही विवरणों को प्रस्तुत करें। सिर्फ 'अनुपालना' या 'अनुपालना नहीं' वाली टिप्पणी स्वीकार नहीं की जाएगी।
 - क्या आप मूल उपकरण निर्माता/विक्रेता हैं?
 - यदि विक्रेता मूल उपकरण निर्माता का विवरण देता है।
 - मूल उपकरण निर्माता से प्राधिकरण प्रमाण पत्र।
 - उत्पाद की मूल सूची।
 - उत्पाद ब्रोशर एवं साहित्य रचना का ब्यौरा
2. आवश्यक जानकारी/विवरण निम्नलिखित पते पर दिनांक 29 जनवरी 2026 तक भेजने का श्रम करें।
रसद निदेशालय, सीमा सुरक्षा बल
लेवल-8, ब्लाक-10,
केन्द्रीय कार्यालय परिसर, लोधी रोड,
नई दिल्ली-110003
ईमेल:- comdtord@bsf.nic.in
3. शीघ्र प्रतिक्रिया का अनुरोध किया जाता है।

कपिल चाहर

(कपिल चाहर)

उप कमाण्डेंट (आधुनिकीकरण)

Government of India
Ministry of Home Affairs
Directorate General Border Security Force
(Prov Dtc: Mod Cell)
Block No.10, CGO Complex, Lodhi Road, New Delhi-03
(Fax: 011-24367683, Email-comdtord@bsf.nic.in)

No. P-63013/219/01/2025/Mod-I/BSF/

Dated, the __Jan 2026

Subject : Request for comments of stakeholders/ OEM/ Firms on QRs (Qualitative Requirements) & TDs (Trial Directives) of "High Performance Fast Patrol Craft"

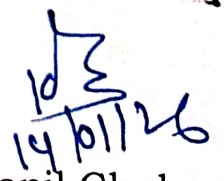
1. The QRs & TDs of "High Performance Fast Patrol Craft" is attached as Appendix 'A'. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their system against each parameter. Only complied or not complied remarks will not be accepted.

- Whether you are OEM/Vendor?
- If vendor details of OEM.
- Authorization certificate from OEM.
- Original catalogue of the product
- Brochure/Literature of the product

2. The required information/details may please be forwarded at the following addresses by 29.01.2026:-

Directorate General BSF,
Level-8, Block No. 10,
CGO Complex, Lodhi Road,
New Delhi-110003
Email: comdtord@bsf.nic.in

3. An early response is requested.


(Kapil Chahar)
Dy. Commandant (Mod)

DRAFT QRs & TDs OF HIGH PERFORMANCE FAST PATROL CRAFT

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
01.	Role & Function	<p>The vessel shall be designed and constructed as High Performance Fast Patrol Craft for use in saline & tidal shallow water in creek area of Gujarat, Sundarban area of West Bengal.</p> <ul style="list-style-type: none"> • Carry out sea front patrolling in Territorial waters of India. • Carryout interception of high speed craft. • Carryout anti-terrorist & anti-smuggling operation. • Capable of carry out search and rescue operation. • Seating capacity of at least 16 personnel including crew with personal belongings, weapon and other operational equipments. • Capable for boarding and seizure operations. • The craft shall be provided with Bow ramp facility for quick embarking and disembarking of troops for any operations. 	To be physically checked during trial of parameters mentioned in the subsequent paras to suit the proposed role & Function.
02.	Speed	<p>i) Not less than 45 knots with full load displacement at 95% MCR. ii) Cruising / economical speed for fuel efficiency: 20 Knots.</p>	To be checked during speed trial in calm water.
03.	Sea worthiness & Maneuverability	<p>i. Excellent performance upto Sea State - 03, will remain operational with reduced performance and Sustainability upto Sea state- 04. ii. The bottom structure of the water craft shall be designed in such a way to withstand / minimize slamming effect when the watercraft is operating at high speed in significant wave height of 1.5 Mtr to 2.5 Mtr. The vessel shall have good maneuverability for the following operational requirements: -</p> <ol style="list-style-type: none"> a) Placing and leaving to & from alongside a vessel while under way for boarding purpose. b) Crash stop as per class requirement. c) Capable of maneuvering from one engine in case of failure of the other. 	To be checked during sea trial.
04.	Endurance	8 Hrs or 200 NM with full load at cruising speed.	Sea Trial to be carried out for minimum 2 hrs @ with full load in favour & against the current. Distance travelled & fuel

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
			consumed to be recorded.
05.	Dimension	(i) Length over all (LOA) minimum 17 Mtr \pm 5% (ii) Extreme Beam – minimum 5 Mtr \pm 10% (iii) Draught –less than 0.8 meter with full load. (iv) Full load static displacement – Not more than 22 MT. (v) Depth of Hull : sufficient depth for comfortable sea operation.	To be physically checked and measure all dimensions.
06	General Features	a) Should be monohull construction (Single mould) b) Having arrangement to prevent towing rope from getting entangled in propulsion system of vessel. c) All major machineries of propulsion i.e. main engine, gear box, shafting and propulsion system should have the SOLAS / Mar Pol ratings. d) Have an expected service life of about 15 years for the machinery, equipment and hull. e) Suitable rated diesel engines with Water Jet propulsion system meeting the speed requirement. f) Latest design concept for the craft with respect to automation, sanctioned aspects and crew comfort are to be included. g) Sufficient hatches with pad locks and door to be provided to meet the comfortness and operational requirement as per class/user requirement. h) Watertight transverse bulkheads to be built in accordance with plan of watertight sections and class requirement. i) All penetrations to be made watertight. j) Watertight bulkheads are to be extended up to main deck. k) Multiple chamber hull with minimum 4 to 5 airtight chamber bulkhead shall be considered during design or as per class rules. l) Noise and vibrations in various sections of the vessel are to be limited as per class rules. m) Main Engine & its accessories and its electronic devices like control panel, control unit parameter display unit & wheel house operating console units and monitoring system related to engines should be the scope of main engine manufacturers (OEM) compatible with gear box and Water Jet propulsion units. n) Power generation (DG set) and its all auxiliary systems like control and monitoring systems should be the scope of DG set engine manufacturers.	Check the criteria with classification society representative and check physically the other items as per class requirement.

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES																
		<p>o) Firm should finalize and project only one/two each make of engine, Gear box and Water Jet propulsion unit (selection of engine should confirm the compatibility of selection of Gear box make and propulsion unit make) which brand having indigenous product support facilities. The firm should submit complete literatures, manuals, specifications, part catalogue, list of OBS, list of Tools etc along with technical bid. Offering of multiple engine will not be accepted.</p> <p>p) All fittings like sea water heavy duty pipe lines of cooling system, heavy duty fuel line, railings, nut, bolt, screw, washer, Light fixtures or any metal parts etc. and any such materials/fixtures should be of SS 316 marine grade stainless steel or brass alloy only.</p> <p>q) Ballast and sullage system should be as per class and MARPOL compliant.</p> <p>r) Vessel should be built in light weight, high strength and low maintenance requirement in service.</p>																	
07	Environmental conditions	<p>The design & building of High Performance Fast Patrol Craft with the equipment and machinery fitted on board should be marinized and capable of satisfactory operation/service, under the following environmental conditions:-</p> <p>a) Wind speed up to 30 knots</p> <p>b) Ambient air temperature from zero to +55 °C.</p> <p>c) Water temperature from 01 C to 40 °C.</p> <p>d) Max relative humidity of 90% at 32 °C.</p> <p>e) Salinity of water up to 36000 PPM</p> <p>f) Tidal Water current -5-6 Knots</p> <p>g) Wave height - 2-9 Feet</p> <p>h) Water density from 1010 to 1025 Kg/m3</p> <p>i) Creek & Sundarbans water which have incidence of water hyacinth, contaminants like polythene bags of varying size and mud sediments etc.</p>	General																
08	Annual exploitation	<p>Annual exploitation of 2000 hours per year</p> <table><tr><th>S. No</th><th>Speed</th><th>Nos of Hrs</th><th>Operating Time</th></tr><tr><td>(i)</td><td>From 40 knot to 45 knots</td><td>100 Hrs</td><td>05% annual exploitation</td></tr><tr><td>(ii)</td><td>From 30 knot to 40 Knot</td><td>400 Hrs</td><td>20% annual exploitation</td></tr><tr><td>(iii)</td><td>From 5 knot to 30 knots</td><td>1500 Hrs</td><td>75%, annual exploitation</td></tr></table>	S. No	Speed	Nos of Hrs	Operating Time	(i)	From 40 knot to 45 knots	100 Hrs	05% annual exploitation	(ii)	From 30 knot to 40 Knot	400 Hrs	20% annual exploitation	(iii)	From 5 knot to 30 knots	1500 Hrs	75%, annual exploitation	General
S. No	Speed	Nos of Hrs	Operating Time																
(i)	From 40 knot to 45 knots	100 Hrs	05% annual exploitation																
(ii)	From 30 knot to 40 Knot	400 Hrs	20% annual exploitation																
(iii)	From 5 knot to 30 knots	1500 Hrs	75%, annual exploitation																

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
09.	Class, Design and construction	<p>The craft shall be designed and constructed in accordance with the highest rules and regulations of the relevant classification society applicable for government service, i.e., IRS / ABS / BV / DNV-GL / RINA, etc., with class notation SUL LC RS 2 Patrol (Special Govt. Service) Swastik Symbol IY or Equivalent notation of respective other classification societies.</p> <p>The hull shall be constructed using the FRP vacuum infusion process, which ensures removal of excess resin that adds weight without contributing to structural strength, thereby producing a stronger and lighter hull capable of meeting the speed requirements mentioned at Para-2 and dimensions at Para-5.</p> <p>To further optimize strength-to-weight performance and durability, low-weight, high-strength advanced carbon composite fiber materials shall be employed. The lamination process shall incorporate carbon fibers in combination with vinyl ester resin or epoxy resin, along with other fibers, strictly in compliance with applicable class rules.</p> <p>Automatic drainage system provision should be provided in all open decks including Fwd/Aft deck for draining water shipped on deck during rain, operations/sailing.</p> <p>The Class approved certificate regarding firm yard is having capability of Vacuum infusion process for Hull construction should be enclosed with the technical bid.</p> <p>It shall be of sufficient strength to withstand the slamming effect of rolling pitching of waves of 1.5 Mtr to 2.5 Mtr and emergency beaching which will be encountered in the adverse service conditions</p> <p>All safety feature, operational feature should meet with owner and class requirement.</p> <p>Recommended material specification is enclosed as Appx 'A'</p>	<p>To be checked physically as per approved drawing plan and criteria with classification society representative.</p> <p>Check the class approved certificate of Vacuum infusion hull construction of yard and Materials.</p> <p>Pour the water on the Fwd/Aft deck and Check the water is automatically drained out or not.</p>
10	3D Design approval of User	<p>"The builder shall provide complete 2D drawings and 3D design animations for review of comfort and operational requirements by the purchaser, class society, and builder at the design stage. The builder should submit 2D & 3D design animation within 30 days of issue of supply order / AT. Amendments, if any, shall be incorporated into the GA drawing prior to final class approval before starting the production of prototype boat."</p>	<p>To be checked all relevant documents, drawings, 3D design etc during prototype inspection.</p>
11	Main Engines, Gear box &	<p>a) 2x In-board diesel engine turbo-charged and after cooled or advanced inboard marine diesel engines developing enough power to meet speed criteria</p>	<p>To be checked physically the positions, operation, parameters,</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
	Propulsion System.	<p>mentioned in clause(2) of this Q.R. Diesel Engines are to be matched at 95% MCR for the full speed requirement.</p> <p>b) The engines should be able to carry out sustained operations for about 8-10 hrs per day, with an annual exploitation of about 2000 hrs. (Medium/heavy duty engines of RPM range 2100 to 2300)</p> <p>c) 02 Nos. gear box compatible with engine and Jet propulsion system Selection of gear ratio suitable to obtain the desirable speed as mentioned SI No. 2 of the QR.</p> <p>d) 02 Numbers Water Jet propulsion package should cater for shallow water operations.</p> <p>e) Main Engines, Gearbox and Propulsions shall be compliant to IACS class rules.</p> <p>The diesel engine should meet the latest international norms on exhaust emission and personnel safety (IMO/MARPOL regulations on exhaust emissions, SOLAS regulation on personnel safety).</p> <p>f) Machinery should be type approved by class where ever applicable for Medium/heavy duty operations.</p> <p>g) 02 Nos Hatch cover of appropriate size to be provided to lift up and remove the engines for Repair & Maintenance.</p>	functions of main engine, gear box, jet propulsion system etc and respective documents / literatures during prototype inspection.
12	Power generation	<p>DG Set :-</p> <p>01 No Marine DG of sufficient capacity of any reputed brand having indigenous product support facilities shall be provided. Type & capacity of generator shall meet class requirements.</p> <p>The power generated by DG shall be adequate for all auxiliary systems, heating, ventilation, air-conditioning lighting and Galley loads with 20% reserve power.</p>	DG Set performance trial to be conducted by running for one hour continuously at full load. All parameters & load of DG Set must be in normal limits specified by the OEM.
13	Fuel Tanks and Fuel System	<p>Fuel tanks and fuel system is to cater for the following:-</p> <p>a) Separate fuel tanks for each main engine are to be provided with arrangement to run both engine from other tank. The tanks are to be located at appropriate place as per design and are to be interconnected.</p> <p>b) The fuel tanks should be of marine grade SS 316 with EPI Coat with baffles to reduce sloshing. The tanks are to have suitable inspection manhole, filling point on deck, drainage valve and suction lines with valves for each engine with water separator and filters. The tanks to be constructed with internal and external</p>	Check fuel capacity. Tank capacity to meet endurance requirement. Check class approval certificate of tank construction and material specification. The gauge indicator to be checked at wheel

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		<p>water tight welding at all joints.</p> <p>c) Fuel tank capacity to be designed to meet the endurance criteria or at maximum 3000 Ltrs.</p> <p>d) "Digital tank level indicators" are to be provided for the fuel tanks. The fuel state indication is to be provided on the bridge/wheel house control panel also visual fuel level indicator provided adjacent to each tank.</p> <p>e) The vent pipes shall terminate in atmosphere and be positioned with a NRV and other arrangements to avoid ingress of rain water or spray.</p> <p>f) Class approval certificate be obtained for both fuel tank and produced during prototype inspection.</p> <p>g) Calibration chart plate be installed at fuel tank to calculate the quantity of fuel.</p>	<p>house.</p> <p>Check calibration chart for visual identification of fuel.</p>
14.	Steering system:-	The steering system shall be single station power assisted hydraulic system or advanced and integrated with Water Jet propulsion system.	To be checked physically
15.	Navigation and Communication and Radio Equipments	<p><u>NAVIGATIONAL EQUIPMENT'S</u></p> <p><u>RADAR- 01</u> (High resolution) High resolution 12 NM RADAR able to track 10 targets simultaneously of reputed make consisting of color 10" / 12" RADAR monitor located in the wheel house and an enclosed scanner mounted on the mast.</p> <p><u>AIS Type A -01</u>(Having option for reception and transmission Mode)</p> <p><u>GPS/Echo</u></p> <p><u>Sounder / Chart plotter</u> One composite GPS/Echo sounder (Dual frequency capable of measuring up to 100 Mtr depth)/chart plotter of any reputed make with chart Cardin wheelhouse shall be provided to suit speed requirement and shall be integrated with the RADAR and shall have multifunctional display with map.</p> <p><u>Magnetic Compass -01</u> Reputed make magnetic compass capable of being operational at high speeds. The compass shall be of 100mm diameter fitted in the wheel house at suitable location to facilitate navigation. The magnetic compass should meet class requirement.</p> <p><u>Search Light:-</u> 01 nos Search light for 360° coverage with remote operation from wheel house of minimum 200 Watt Xenon lamp (minimum 200 Mtr range) to be positioned on wheel house roof with operating system from inside the wheel house.</p> <p><u>Loud Hailer:- 01 Nos</u> With speaker at forward and aft.</p> <p><u>Electric Horn/ Whistle:- 01 Nos</u></p>	<p>To be checked physically and functionality of all items/Eqpts.</p> <p>Check class approved certificates/ OEM literature wherever applicable.</p> <p>Check all functions of navigational equipment's.</p> <p>Physically count and check the items.</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
	Propulsion System.	<p>mentioned in clause(2) of this Q.R. Diesel Engines are to be matched at 95% MCR for the full speed requirement.</p> <p>b) The engines should be able to carry out sustained operations for about 8-10 hrs per day, with an annual exploitation of about 2000 hrs. (Medium/heavy duty engines of RPM range 2100 to 2300)</p> <p>c) 02 Nos. gear box compatible with engine and Jet propulsion system Selection of gear ratio suitable to obtain the desirable speed as mentioned SI No. 2 of the QR.</p> <p>d) 02 Numbers Water Jet propulsion package should cater for shallow water operations.</p> <p>e) Main Engines, Gearbox and Propulsions shall be compliant to IACS class rules.</p> <p>The diesel engine should meet the latest international norms on exhaust emission and personnel safety (IMO/MARPOL regulations on exhaust emissions, SOLAS regulation on personnel safety).</p> <p>f) Machinery should be type approved by class where ever applicable for Medium/heavy duty operations.</p> <p>g) 02 Nos Hatch cover of appropriate size to be provided to lift up and remove the engines for Repair & Maintenance.</p>	functions of main engine, gear box, jet propulsion system etc and respective documents / literatures during prototype inspection.
12	Power generation	<p>DG Set :-</p> <p>01 No Marine DG of sufficient capacity of any reputed brand having indigenous product support facilities shall be provided. Type & capacity of generator shall meet class requirements.</p> <p>The power generated by DG shall be adequate for all auxiliary systems, heating, ventilation, air-conditioning lighting and Galley loads with 20% reserve power.</p>	DG Set performance trial to be conducted by running for one hour continuously at full load. All parameters & load of DG Set must be in normal limits specified by the OEM.
13	Fuel Tanks and Fuel System	<p>Fuel tanks and fuel system is to cater for the following:-</p> <p>a) Separate fuel tanks for each main engine are to be provided with arrangement to run both engine from other tank. The tanks are to be located at appropriate place as per design and are to be interconnected.</p> <p>b) The fuel tanks should be of marine grade SS 316 with EPI Coat with baffles to reduce sloshing. The tanks are to have suitable inspection manhole, filling point on deck, drainage valve and suction lines with valves for each engine with water separator and filters. The tanks to be constructed with internal and external</p>	<p>Check fuel capacity.</p> <p>Tank capacity to meet endurance requirement.</p> <p>Check class approval certificate of tank construction and material specification.</p> <p>The gauge indicator to be checked at wheel</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		<p>water tight welding at all joints.</p> <p>c) Fuel tank capacity to be designed to meet the endurance criteria or at maximum 3000 Ltrs.</p> <p>d) "Digital tank level indicators" are to be provided for the fuel tanks. The fuel state indication is to be provided on the bridge/wheel house control panel also visual fuel level indicator provided adjacent to each tank.</p> <p>e) The vent pipes shall terminate in atmosphere and be positioned with a NRV and other arrangements to avoid ingress of rain water or spray.</p> <p>f) Class approval certificate be obtained for both fuel tank and produced during prototype inspection.</p> <p>g) Calibration chart plate be installed at fuel tank to calculate the quantity of fuel.</p>	<p>house.</p> <p>Check calibration chart for visual identification of fuel.</p>
14.	Steering system:-	The steering system shall be single station power assisted hydraulic system or advanced and integrated with Water Jet propulsion system.	To be checked physically
15.	Navigation and Communication and Radio Equipments	<p><u>NAVIGATIONAL EQUIPMENT'S</u></p> <p><u>RADAR- 01</u> (High resolution) High resolution 12 NM RADAR able to track 10 targets simultaneously of reputed make consisting of color 10" / 12" RADAR monitor located in the wheel house and an enclosed scanner mounted on the mast.</p> <p><u>AIS Type A -01</u>(Having option for reception and transmission Mode)</p> <p><u>GPS/Echo</u></p> <p><u>Sounder / Chart plotter</u> One composite GPS/Echo sounder (Dual frequency capable of measuring up to 100 Mtr depth)/chart plotter of any reputed make with chart Cardin wheelhouse shall be provided to suit speed requirement and shall be integrated with the RADAR and shall have multifunctional display with map.</p> <p><u>Magnetic Compass -01</u> Reputed make magnetic compass capable of being operational at high speeds. The compass shall be of 100mm diameter fitted in the wheel house at suitable location to facilitate navigation. The magnetic compass should meet class requirement.</p> <p><u>Search Light:-</u> 01 nos Search light for 360° coverage with remote operation from wheel house of minimum 200 Watt Xenon lamp (minimum 200 Mtr range) to be positioned on wheel house roof with operating system from inside the wheel house.</p> <p><u>Loud Hailer:- 01 Nos</u> With speaker at forward and aft.</p> <p><u>Electric Horn/ Whistle:- 01 Nos</u></p>	<p>To be checked physically and functionality of all items/Eqpts.</p> <p>Check class approved certificates/ OEM literature wherever applicable.</p> <p>Check all functions of navigational equipment's.</p> <p>Physically count and check the items.</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		<p>One electric whistle / horn shall be fitted for navigation.</p> <p><u>Police Siren:-</u> 02 and police light – 01 set</p> <p><u>NAVTEX:-</u> For weather and navigational warning shall be provided.</p> <p><u>Binoculars:-</u></p> <p>One Marine binocular of Magnification 7 x 50, with protection case of reputed make.</p> <p>One night vision binocular of 7 x magnification be provided.</p> <p>One Barometer, Anemometer, Inclinator and wet & dry bulb thermometer in the wheel house shall be supplied & fitted</p> <p><u>Navigational lights:-</u></p> <p>Navigational lights as per COLREG 1972 as amended rules as applicable shall be provided.</p> <p><u>Additional Items</u></p> <p>Following additional items shall be provided:-</p> <ol style="list-style-type: none"> 1. Ship's clock- 01 2. First Aid Box 3. Additional android map navigation with google map screen (offline & online) having access facility with wired/wireless connectivity with mobile phone etc. <p><u>COMMUNICATION EQUIPMENT</u></p> <p><u>VHF Radio (Marine) with DSC capabilities:- 01</u></p> <p>25W VHF TX/ RX multi-channel marine radio telephone shall be provided positioned in the wheelhouse.</p> <p><u>Police Radio:-</u> To be provided by BSF</p> <p><u>Camera provisions:-</u></p> <ol style="list-style-type: none"> i) 360 degree (PTZ) camera- 01 No ii) Bullet camera 04 Nos (At Fwd, STBD, PORT and Aft deck) iii) One TV screen 18" along with Accessories be installed at Aft / Wheel house cabin as design space availability to monitor the camera system. iv) Sufficient storage provision for above items. 	
16.	Associated safety equipment's	<p>Lifesaving appliances as per the statutory requirements for the craft shall be provided. Stowage space shall be provided for life jacket and mounting brackets for life buoys. Lifesaving equipment's shall be class approved type as per SOLAS/MMD/ Class requirements.</p> <ol style="list-style-type: none"> a) Life raft – 02 Nos (06 men capacity of rectangular shape yacht model be fitted on the top deck with HRU. 	All items to be checked physically.

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		<p>b) Life jackets – 24 Nos (20 Nos Normal Adult Jacket Type with jip and 03 strips and 04 Nos hazardous duty life jackets.</p> <p>c) Lifebuoy- 06 (Min 30" diameter. 04 with life line and 02 with light and smoke signal)</p> <p>d) Flares pack- 01 - Comprising 3 red rocket parachute flares, 06 red hand flares and 2 orange buoyant smoke signals / markers)</p> <p>e) Signaling Mirror- 01 (Daylight signaling)</p> <p>f) Torch- 01 (Water proof electric torch suitable for Morse signaling)</p> <p>g) Whistle- 01 (Whistle or equal sound signal)</p> <p>h) One buoyant safety knife shall be provided. One bucket shall be provided.</p> <p>i) Hand held spotlight with wander leads x 2, low level deck lighting as per design.</p> <p>j) Shore power connection facilities (230 Volt, Single phase) with 100 mtrs cable of required capacity.</p> <p>k) Firefighting system and damage control system as per class requirements.</p> <p>l) Water jet Propulsion unit with Inspection hatches, fully complaint engine room with forced air ventilation system and full compliant ships wiring and fuse system.</p> <p>m) Adequate deck rails and hand holds to the deck areas of the craft and suitable foldable mast to host navigational and communication equipment.</p> <p>n) One blue flashy police light on wheel house roof, one police siren on wheel house roof.</p> <p>o) Boat poles /hook x 2 floating type & mooring line x 4</p> <p>p) Towing line with stern mounted towing posts and towing line storage locker. Towing post should be strengthened with additional stiffeners.</p> <p>q) Mooring bollards, cleats and fairleads of SS 316 to be provided and strengthened by providing additional stiffeners linked with bulkheads to withstand the watercraft load in the tidal current / bad weather to ensure proper mooring of watercraft.</p> <p>r) The Machinery space shall be fitted with fixed firefighting system and fire-alarm & smoke detection system meeting class requirements.</p> <p>s) A fire alarm system operated by smoke detectors shall be provided for engine / generator room (Detectors installed above the engines), accommodation cabin and wheelhouse. An audible alarm shall be fitted at the helm console.</p>	<p>Check class approved certificates/OEM literature wherever applicable.</p> <p>Physically count and check all the items.</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
17.	Weapon mounting & Armored protection	<p>a) The High Performance Fast Patrol Craft is to be fitted with Armour protection of NIJ level –III of lightweight materials like fiber with suitable material of International standards all around to wheelhouse and Cabin including bullet proof glass. Armored protection NIJ level-III of lightweight materials like fiber should be fixed inbuilt and not removable.</p> <p>b) 01 Number Remote operated weapon mounting system of 12.7 MM Stabilized Remote Control Gun (SRCG) be fitted on the top of cabin. The Arc of fire will be as per ability of the SRCG with remote operating facility at wheel house be provided and with provision to operate manually.</p> <p>c) Sufficient armament locker to be provided.</p> <p>d) 02 SS LMG post one each at Fwd and Aft deck for mounting LMG having 270° arc of fire.</p> <p>e) Light weight preferably Fiber made 04 Nos Bullet proof Helmet and 04 Nos bullet proof jackets to be provided for firers.</p> <p>Note:- 12.7 MM Gun for SRCG to be procured by BSF and provided.</p>	<p>Armored protection material lab test certificate to be checked.</p> <p>Weapon mounting points, posts and locker spaces to be checked physically. Physically count the items.</p>
18	Aft Cabin	<p>Aft cabin should have separated from the wheel house with a sliding door. Seating arrangements of 12 pers in 03 rows at Aft cabin. Seat with arm rest & lap belt for troops. First 02 rows both side seat should be folded type to convert like foldable belt for crew comfortness/rest. Cabin should be air conditioned and with 06 suitable wall mounted fan.</p> <p>01 toilet having reserve tank with electric flushing and manual flushing arrangement of sewage shall be provided.</p> <p>01 wash basin, mirror, place for keeping soap and hand wash, towel holder with fittings etc to be provided. 01 exhaust fan.</p>	<p>To be checked physically as per approved drawing plan.</p> <p>Physically count and check the items.</p>
19.	Wheel house	<p>It should be air conditioned & shall have 4 numbers of suitable shock mitigating seat with arm rest & lap belt for operating crew in the wheel house.</p> <p>The wheel house must be provided the following equipment's facilities:-</p> <ul style="list-style-type: none"> • Almost 360 degree vision • Front wind screen should be placed vertical and bottom inclined towards wheel house room to protect the wheel house equipment's from direct sun rays and for clear vision of crews while sailing during rain and foggy weather. • Overhead vision (Adequate number of Hatches) • Steering system • Engine/ propulsion controls and instrumentation • Ventilation and air conditioning including roof hatches 	<p>To be checked physically as per approved drawing plan. Check wall fans.</p> <p>Physically count and check the items.</p>

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		<ul style="list-style-type: none"> Adequate stowage areas for all navigation equipment like RADAR DGPS / Magnetic compass / SRCG control system to operate weapons on the top remotely etc. Master control panel for all system 02 Nos Wall mounted fan for cabin. Wind screen wiper (heavy duty) 	
20.	Air condition plant	<p>➤ The craft shall be provided with marine reputed make air conditioning system / 5 Star rating Split AC System (non-invertor) with hydrophilic coating at fins. The capacity of the AC shall be as per requirement. The AC shall be capable of maintaining 24° C room temperature in an ambient temp of 45° with humidity above 80 percent.</p> <p>➤ Separate air conditioning system chosen be provide adequate cooling capacity in wheel house and crew accommodation independently to maintain cool condition even at high temperature.</p> <p>➤ In case split AC system, the outer unit be installed in the appropriate place to avoid sea water contact, which may damage the system.</p> <p>AC system should have the service facility in India.</p>	<p>To be physically checked and all ACs to be run during full load trial.</p> <p>Check the wall fan.</p> <p>Physically count and check the items.</p>
21.	Fenders	Rubber fender provided all around. The material shall be of low weight with high shock absorbing and good buoyancy. 06 Nos pneumatic fender size 2.5 feet x 1 feet to be provided with the boat for additional safety during place the boat alongside.	<p>Check fender physically.</p> <p>Physically count and check the items.</p>
22.	Anchor & windlass	The complete system shall have anti rust material inside cable locker. Anchor to have sufficient capacity chain and rope have adequate strength and length to hold the craft in deep water upto 12 Meter. Anchor and windlass system as per the class requirement shall be provided.	To be physically checked during trial. Physically count and check the items.
23.	Railing	Stainless steel 316 hand / grab rails shall be fitted where ever required / applicable throughout accommodation and service area for safety of personnel on board.	To be physically checked
24.	Anode protection external	Suitable anodes to be fitted on the hull sea chest & other appropriate places for 18 months of continuous service	To be physically checked
25.	Bow landing Ramp	Bow landing ramp to be provided with adequate capacity to lifting and downing arrangement for easy embankment and de-embankment of troop for operation. Bow protection plate to be provided.	To be physically checked the function of ramp.

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
26.	Inverter / UPS	Hybrid Inverter & Litium Ion battery capacity of 3 KW maximum power point tracking (MPPT) with independent charging facility by 0.5 KW solar panel (capacity of solar panel can be increased if more space is available on top) and remaining through DG / Shore connection shall be provided for communications, emergency lighting 10 Nos / Fan 04 Nos for all cabins, Mobile charging points etc. backup upto 6 to 8 hours with 5 KW Lithium Ion battery capacity. System may be integrated/synchronized with the emergency lighting system design.	To be physically checked and run fan & light etc connected to inverter for 1 hour. Physically count and check the items.
27.	Bilge pump	Electric power operated automatic bilge pump (vertical type) be provided in each bulkhead compartment of the hull. One additional stand by manual/hand operated bilge pump in Engine room to be provided. Hand bilge pump- as per class requirements. Bilge alarm system – fitted to all bilge wells to indicate high water level in the bilge. Alarm panel shall be fitted on helm console in the wheelhouse. Bilge pump- as per class requirement. Electric drive type pump with a 24 V DC be fitted.	Check functioning of bilge pump and alarm system. Physically count and check the items.
28.	Galley	One small galley space in the cabin with 01 No. Heavy Duty Induction Stove to make tea and hot water shall be provided including following:- <ul style="list-style-type: none"> • 01 No tea kettle • 01 No. Microwave oven Small size. • 02 Nos 01 Ltr thermos • 02 ltr/03 ltr/05 ltr casserole 01Nos each • Tray, glass, tea set • Sink Unit. • 01 Portable refrigerator. • Waste disposal unit. • Lighting. • Fire extinguisher. 	To be physically checked and functions of various equipment's. Physically count and check the items.
29	Aft Deck	Should have proper drain system of sea water shipped onboard vessel while sailing. All surfaces shall be of minimum maintenance and easy to clean. The areas shall have adequate handholds protections. Seating arrangements with SS 316 frame bench for 04 person each at STBD & PORT with synthetic material niwar/strips.	To be physically checked. Pour the water on the aft deck and Check the water is automatically drained out or not.

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES									
30.	Paint	<p>Tin free anti fouling paint system as per latest International Maritime Organization (IMO) regulations shall be applied to hull bottom (below water line) The pattern of the paint on the outer body part of the boat will be disruptive with combination of OG& cream / smoke gray color. Inside of hull paint color should be pale cream. Engine room should be painted with fire retardant paint.</p> <table><tr><td>(i)</td><td>Anti-Fouling Paint :- Pen guard HB primer (Epoxy primer) 01 Coat-100 Micron (DFT) Safeguard universal ES grey tie coat 01 Coat-100 Micron (DFT) Sea Quantum pro-u light red- 01 coat-150 micron (DFT) (Silyl Acrylate Anti-fouling self-polishing paint) Sea quantum pro-u-dark red -01 coat-150 micron (DFT) (Silyl acrylate anti-fouling self-polishing paint) Metal oxide paint & primer to jet units</td><td></td></tr><tr><td>(ii)</td><td>Jet system/bucket & bucket system & propulsion nozzle & bucket system to be spray painted</td><td></td></tr><tr><td>(iii)</td><td>AFT deck and all rounds walk way anti-skid painting.</td><td></td></tr></table>	(i)	Anti-Fouling Paint :- Pen guard HB primer (Epoxy primer) 01 Coat-100 Micron (DFT) Safeguard universal ES grey tie coat 01 Coat-100 Micron (DFT) Sea Quantum pro-u light red- 01 coat-150 micron (DFT) (Silyl Acrylate Anti-fouling self-polishing paint) Sea quantum pro-u-dark red -01 coat-150 micron (DFT) (Silyl acrylate anti-fouling self-polishing paint) Metal oxide paint & primer to jet units		(ii)	Jet system/bucket & bucket system & propulsion nozzle & bucket system to be spray painted		(iii)	AFT deck and all rounds walk way anti-skid painting.		To be physically checked and tallied with class certificate/inspection report wherever applicable
(i)	Anti-Fouling Paint :- Pen guard HB primer (Epoxy primer) 01 Coat-100 Micron (DFT) Safeguard universal ES grey tie coat 01 Coat-100 Micron (DFT) Sea Quantum pro-u light red- 01 coat-150 micron (DFT) (Silyl Acrylate Anti-fouling self-polishing paint) Sea quantum pro-u-dark red -01 coat-150 micron (DFT) (Silyl acrylate anti-fouling self-polishing paint) Metal oxide paint & primer to jet units											
(ii)	Jet system/bucket & bucket system & propulsion nozzle & bucket system to be spray painted											
(iii)	AFT deck and all rounds walk way anti-skid painting.											
31	Marks on Hull superstructure etc	The crafts name, ID No., crafts' emblem & National flag is to be affixed to both sides of the hull at super structure level. The craft's name, ID No. BSF emblem to be affixed on transom. Size and location will be decided at the time of building of vessel. The Craft name, BSF emblem will be provided by BSF.	To be physically checked									
32.	Supervision	<p>"The vessels shall be inspected by the classification society as per class requirements. In addition, the owner will conduct stage-wise supervision of hull construction, machinery installation, and accommodation to ensure operational requirements and troop comfort. The shipyard shall provide full inspection facilities at its yard and OEM premises. A BSF supervisory team, comprising one WW Officer and three members (SO from WKSP, Master, and Engine Driver), will be detailed by FHQ WW to undertake periodic visits in rotation to monitor quality and progress until project completion."</p> <p>They will visit the building yard and all machineries and equipment manufacturing yard / company in a regular interval atleast officer and 01 member</p>	BSF supervisory team will conduct Periodic check during construction.									

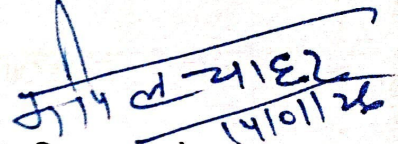
S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		at a time to confirm the quality and ensure the boat shall be built as per required specification.	
33	Certificates	<p>Following documents to be provided by builder with each vessel on delivery- three sets in hard copy & one set in soft copy:-</p> <ol style="list-style-type: none"> All class society approved drawings, booklets, manuals & trial data Built and as fitted drawings and consolidated schedule of piping, painting, insulation, and paneling's etc. Manual with regards to installation, operation and maintenance of various equipment / fittings, systems. Service manual, part catalogue/ identification list of major machinery such as main engine, gear box, generators, pumps & other accessories. Docking plan, LSA plan, firefighting plan alongwith instruction of operating safety equipment. Certificate of any member of IACS class Builder's certificate FO tank class approved certificate and calibration chart. Anchor & chain cable mooring ropes certificate. Major machinery (Main Engine, Gear box, water jets & generators etc) type approval certificate. Stability booklet. Maintenance schedule on utility basis (i.e. Run Hrs) and time basis (i.e. weekly, monthly, yearly etc)of all equipment's 	<p>Check all documents physically during prototype trial.</p> <p>Physically count and check all the items.</p>
34.	Associated equipment	<ol style="list-style-type: none"> Basic maintenance kit related to repair. Hull lifting points along with lifting arrangements and slings x 4 nos capacity 100% excess, with spreader bar to suit to the length & breadth of vessel. Suitable light weight cradle for safe transportation if by road transfer. 	To be physically checked
35	Inspection, Test & Trials	<p>The test and trials shall be carried out as per the standard procedure of class requirement or as per following details.</p> <ol style="list-style-type: none"> Machinery trial Beaching Trial Mooring trials Speed trials <ol style="list-style-type: none"> Light load condition Full load condition Endurance/Sea trial 	All trials to be conducted during prototype inspection by BSF BOO along with class representative for the prototype boat only, at the yard premises / nearby sea of builder location.

S.NO	ITEMS	QRS / TECHNICAL SPECIFICATION	TRIAL DIRECTIVES
		f) Maneuverability trials and water jet trials as per class requirement. g) Turning circle trials h) Astern trials i) Crash stop j) Electrical equipment's trials k) Anchor trials as per class / QR requirement l) Generator trial m) Navigation equipment's trial	Speed, functionality of equipment's, machineries and maneuvering trials need to be conducted again during JRI at consignee location for 01 to 02 hrs at consignee location for each boat.
36	Guarantee/ Warrantee	The firm will have to provide 02 years guarantee/warranty for boat from the date of acceptance of consignee location in satisfactory condition. Guarantee & warranty services on site (Various BSF deployment locations) shall be provided by the OEM/authorized service agencies of respective machineries. The Guaranty / Warrantee shall be comprehensive i.e. for all system. The company will provide the all consumable items including oil / lubricant, filters, batteries, spares of all machineries (only Except fuel) for the period of guarantee / warrantee on free of cost. All periodical maintenance should be done by the firm for all machineries/equipment. The OEM service provider of the respective machineries shall provide a certificate that they have the experience of servicing similar type of engines/machineries during last 05 years in India.	Physically check the documents
37	OBS	(i) Tentative List of On Board Spares (OBS) and Tools enclosed as Appx- "B" & "C" respectively, which are required to be supplied along with each boats. <u>Note :-</u> Proposed BDS / Tools list is not exhaustive, may vary as per the OEM recommendation of engine/system of different make in the vessel. Firm should propose the tentative list on the basis of OEM recommendation of the proposed machineries to be installed in the vessel on the basis of above list and submitted along with technical bid.	BSF BOO will physically check and finalize the list of all required OBS / Tools corresponding to the installed machinery / equipment's on the basis of the QR requirement during proto type inspection.
38	Training	Provision of imparting training to 08 BSF crew / Wksp staff per boat for the period of 02 weeks regarding onboard operation & maintenance of main engine by OEM rep, propulsion system by OEM rep, all fitted equipment's, machineries and manning of crafts shall be included in the initial package.	Firm should conduct onboard training for men at the consignee location.

तकनीकी विशेषज्ञों के उप समूह द्वारा यह निश्चित किया गया है कि उक्त गुणात्मक आवश्यकता को अधिक बेहतर बनाने के लिए गृह मंत्रालय एवं सीमा सुरक्षा बल की वेबसाईट पर विक्रेताओं/फर्मों के सुझाव प्राप्त करने हेतु 15 दिन के लिए अपलोड किया जाए।

नोट – सभी विक्रेताओं/फर्मों से निवेदन है कि अपने सुझावों के साथ निम्नलिखित कागजात संलग्न कर ई-मेल पता comdtord@bsf.nic.in पर भेजने का श्रम करें:-

1. उत्पाद की वास्तविक विवरण पुस्तिका।
2. उत्पाद की साहित्यिक रचना का ब्यौरा।
3. गुणात्मक आवश्यकताओं के उपर व्यापक टिप्पणीयाँ।


(कपिल चाहर)

उप कमांडेण्ट (आधुनिकीकरण)

RECOMMENDED MATERIAL SPECIFICATION FOR ENGINEERING SYSTEM OF HIGH PERFORMANCE FAST PATROL CRAFT

S/no.	Description	Pipes	Fittings	Valves	Flanges	Fasteners
1.	Lub Oil System	Copper – upto 6 bar as per BS 2871 Cu-Ni 90/10 – 10 bar as per BS 2871	Gun Metal BS 1400 LG4C	Gun Metal BS 1400 LG4C	Gun Metal BS 1400 LG4C	Aluminium Bronze as per NES 837 Part-II
2.	Fuel Oil System	90-10 Cu-Ni	GM to BS 1400 LG4C	GM to BS 1400 LG4C	GM to BS 1400 LG4C	Aluminium Bronze as per NES 837 Part-II
3.	Fresh Water System (Domestic)	Copper / GI Steel / Food grade Polypropylene Random Copolymer Pipe (PPR- Pipe)	GM to BS 1400 LG4C / SS to AISI 316 / PPR	GM to BS 1400 LG4C / SS to AISI 316 / PPR	GM to BS 1400 LG4C / SS to AISI 316 / PPR	Aluminium Bronze as per NES 837 Part-II / PPR
4.	Sea Water Fire Main, Ballast, Salvage (Suction / Discharge)	90 / 10 Cu-Ni	NAB as per NES 747 Part-II	NAB as per NES 747 Part-II	NAB as per NES 747 Part-II	Aluminium Bronze as per NES 837 Part-II
5.	Compressed Air System (a) Air upto 8 Bar pr (b) Air pr 8 to 30 bar (c) Above 30 and upto 276 bars	(a) Seamless steel to BS 3601 class 22 or 27 or seamless copper (b) Seamless steel to BS 3602 HFS or CDS class 360 & 410 (c) Solid drawn 70/30 Cu-Ni to NES 780 Part 3	SS to AISI – 316	Gun Metal BS 1400 LG4C or Carbon steel	Aluminium Bronze or SS to AISI-316	Aluminium Bronze of Stainless Steel
6.	Hydraulic system	Stainless Steel	Stainless Steel	Stainless Steel tp AST< A216	Stainless Steel tp AST< A216	Stainless Steel

- (a) Preference is to be given to centrifugal pumps for the above applications.
- (b) Material for pumps
- (i) Casing – Al Bronze to DGS 8520 / GM to DGS 203
 - (ii) Shaft – Stainless Steel AISI 316
 - (iii) Impeller – Al Bronze to DGS 8520
 - (iv) Wear Ring – LB BS 1400 LPB 1
- (c) Pumps for Lub oil and Fuel Oil – Preference will be use to screw type pumps for this application.
- (d) Seals, Mechanical seals are to be provided for all types of pumps.

TENTATIVE ON BOARD SPARES (OBS) FOR HIGH PERFORMANCE FAST PATROL CRAFT

Page 17 of 19
APPX - 'B'

S/No.	Particulars	Qty Per Boat	Remarks
MAIN ENGINE			
1.	All type Lub Oil filters	04 Set	
2.	All type Diesel filter	04 Set	
3.	All Lub Oil (Qty as per Engines Requirement)	For 02 time replacement	
4.	Water Separator	04 Set	
5.	Air cleaner filter	04 Set	
6.	Coolants (Qty as per Engine Requirement)	For 02 time replacement	
7.	Sea Water pump repair kit	02 Nos	
8.	Engine Oil drain plug gasket	04 Set	
9.	All type of belts	02 set	
10.	Relay for starter with Harness	02 Nos	
11.	Main engine all sensors with Harness	01 Set	
12.	Sea water line anodes	02 set	
13.	Sea water cooling pump	01 No	
14.	Heat exchanger pressure cap big & small	01 set	
GEAR BOX			
15.	Lub Oil filter	02 Set	
16.	Solenoid switch reverse with Harness	01 No	
17.	Solenoid switch forward with Harness	01 No	
18.	Gear oil (Qty as per engine requirement)	For 02 time replacement	
19.	Main relay forward with Harness	01 Set	
20.	Main relay reverse with Harness	01 Set	
21.	Temperature & pressure Sensor with Harness	02 Set	
22.	Zinc anode gear oil cooler	01 Set	
23.	Gear oil cooler	01 No	
JET PROPULSION			
24.	Hydraulic Cylinder Assembly	01 Set	
25.	Hydraulic Filter	04 Set	
26.	Sensors with Harness	01 Set	
27.	Relay with Harness	01 Set	
28.	Hydraulic cylinder oil seal kit	01 Set	
29.	Hydraulic pressure gauges	01 Set	
30.	Zinc anode for bucket	01 Set	

31.	Coupling lamina plate (if fitted)	01 Set	
32.	Main jet shaft seal complete set with bellow	01 Set	
33.	Nozzle and bucket bushes & spacer etc	01 Set	
DG SET / ELECTRICAL			
34.	DG Set Oil filter	03 Set	
35.	DG Set Fuel filter	03 Set	
36.	Air Filter	03 Set	
37.	Lub Oil	For 02 time change	
38.	Over Speed Control	01 No	
39.	Battery Charger	01 No	
40.	Sea Water cooling Pump repair kit	03 Set	
41.	AVR (Automatic Voltage Regulator)	01 No	
42.	Sensor (Water temperature, Oil pressure, Lub oil temperature) with Harness	01 Set	
43.	Sea Water cooling Pump	01 No	
MISC ITEMS			
44.	All Electrical bulbs / Tube lights / LED lights/flood lights	25% of installed Nos	
45.	Complete vessel fuse set, MCB (Electrical system & all machineries)	01 Set	
46.	Engine room blower blades.	01 Set	
47.	Searchlight Bulb	02 Nos	
48.	Navigation bulb	01 Set (all bulbs)	
AIR CONDITION			
49.	AC Compressor belt OR PCB board	02 Nos	
50.	Sea water cooling pump OR Display board unit	01 Set for each AC System	
51.	AC Compressor connector Relay (IF APPLICABLE)	04 Nos	
52.	Temperature sensor.	04 Nos	

Note :- Proposed OBS list is not exhaustive may vary as per the engine/system of different make in the vessel. Firm should propose the final list on the basis of above list along with technical bid.

TENTATIVE LIST OF TOOLS FOR HIGH PERFORMANCE FAST PATROL BOAT

S/No.	Particulars	Qty Per Boat	Remarks
01	D – spanner Taparia (6-32)	01 set	
02	Ring set Taparia (6-32)	01 set	
03	Allen key Taparia (inches)	01 set	
04	Allen key Taparia (mm)	01 set	
05	Combination plier 8" & 6" Taparia	01 Nos each	
06	Nose plier long 8" Taparia	01 Nos	
07	Cutting plier 8" Taparia	01 Nos	
08	Hammer Ball pin (1/2 kg)	01 Nos	
09	Hammer millet	01 Nos	
10	Screw driver flat 12" Taparia	01 Nos	
11	Screw driver flat 10" Taparia	01 Nos	
12	Screw driver flat 8" Taparia	01 Nos	
13	Screw driver 4 tip 7" Taparia	01 Nos	
14	Screw driver 4 tip 10" Taparia	01 Nos	
15	Taparia metal square socket set 3/8" square drive	01 set	
16	Taparia 1/2" square drive socket set	01 set	
17	Pipe wrench 10"	01 Nos	
18	Adjustable wrench 12"	01 Nos	
19	Line Tester	01 Nos	
20	Multimeter	01 Nos	
21	Hydrometer	01 Nos	
22	Heavy duty tool box (Taparia)	01 Nos	
23	Chisel 6"	01 Nos	
24	Filter opening belt (heavy duty)	01 Nos	
25	Grease gun	01 Nos	
26	Oil can 1/4 pint (150 ml)	01 Nos	
27	6" 3-leg puller	01 Nos	
28	Work light with metal guard with 10 meter wire length	01 Nos	
29	Portable Deck wash (Bosch) (Max pressure 130 bar)	01 Nos	
30	Screw driver Electric type 12" Taparia	01 Nos	
31	Screw driver Electric type 08" Taparia	01 Nos	
32	Screw driver set Heavy duty Taparia	02 Set	

Note: - Other than above mentioned tools; special tools, if any prescribed by OEM, which is required for BSF to carry out any periodical and routine repair and Maintenance, should be provided by the concerned firm as per requirement for the main engine, DG set, Jet propulsion system and other vessel equipment's etc.

अपल-चाहरी
14/01/24
(कपिल चाहर)
उप कमांडेंट (आधुनिकीकरण)