Appendix - B

QRs/TECHNICAL SPECIFICATION OF HOVER CRAFT

S/No		QRs/Specification
1	FUNCTIONS	Combat Hovercraft to carry 8 men including crew and have capability to negotiate mangroves of Creek. It should offer faster response time and can be effective in sir creek area of Gujrat Ftr and move in areas not affectively patrolled by Watercrafts/Boats. It must offer mobility and speed to detect and deter infiltrator and smugglers moving near border.
2	CLASSIFICATION	The Vessel shall be built to comply class rules of IRS. or equivalent IACS members like ABS/DNV/BV etc.
3	SEA WORTHINESS	The hovercraft should be capable to operate up to Sea States 3.
4	STABILITY	Fulfill all stability requirements specified by the Classification Society or other equivalent authorities.
5	GENERAL DIMENSIONS	a) Length (m) hovering - not more than 9 Meters b) Beam (m) hovering - not more than 5 Meters c) Max height (m) - not more than 5 Meters d) Passenger (including crew) - 8 person e) Maximum payload(Tonnes) - not less than 1 ton f) Normal endurance(hours) at cruising speed - 8 hrs at full payload g) Obstacle clearance - not less than 0.4 Meter
6	PROPULSION	The craft is to be driven by variable pitch propeller powered by air/water cooled turbo charge, 2 x CRDI Diesel engine. Propulsion system must be class approved.
	i) Control	Directional control be achieved by moving rudders suitably mounted, which operate in the propeller ship stream. Additional control at low speed should be provided by skirt lifting system and side control posts or handlebar steering type with easy operation to be provided.

PO : _____ M-1 : _____ M-2 : Not attended M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification
	ii) Propellers.	Propulsion system should be variable pitch and full Reversible type. Propeller should be ducted blade controllable pitch type. Fans for propulsion, should be shrouded and additional safety screens provided in front of propellers to protect them from damage due to foreign bodies like fired ammunition cases.
	iii) Buoyancy	Craft should float while engine is switch off
7.	**SPEED**	The hovercraft should be capable of doing sustained speed not less than 25 knots for 08 hrs at full payload. (i) Top speed on water - 35 Knots (ii) Cruising speed - 25 Knots. (iii) Top Speed on land - 20 knots
8.	**MANEUVERING**	
	i) Braking Distance	Fully loaded hovercraft should come to complete halt from full speed in distance not more than six times its length.
	ii) Turning Radius	Hovercraft should turn 90 degree in water within the radius at speed indicated below (i) 25 Knots - 50 Mtrs (ii) 10 Knots - 25 Mtrs (iii) 5 Knots - 10 Mtrs
	iii) Pivot turning	Static hovercraft should be capable to turn 360 degree at the same position while in water or on ground.
	iv) Obstacle clearance	Able to clear obstacles such as sand bars and mudflats/bushes of heights not less than 0.4 Mtr.
9.	**MAIN MACHINERY SYSTEM.**	All machinery / Systems must be built as per drawings approved by the classification society.
	i) Main diesel engine	Hover craft be equipped with liquid-cooled, turbocharged 2 x CRDI diesel engines for high speed application, class approved. The engine should be electric start type.
	ii) Air conditioning system	A suitable air conditioning system for tropical condition be provided for Crew and passenger cabin.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification
	iii) Batteries	All batteries be Maintenance free gel type.
	iv) Light installation	The illumination of Light in crew spaces be in the range of 50 - 80 lux. Marine type LED lighting be installed.
	v) Emergency lights	The emergency light be installed according to the Classification Society requirements.
10	**ENDURANCE**	Endurance should be at least 200 NM or 8 Hours of operation at cruising speed of 25 Knots.
11	**FUEL TANK CAPACITY**	To meet the endurance plus 25% reserve.
12	PAYLOAD	Should not be less than 1 ton. Payload to include first line ammunition of one LMG, weight of 8 personnel including personal kit arms and ammunition @ 90 kg /person and other essential items.
13	**CONSTRUCTION AND MATERIAL**	i) The hull is to be made of vinyl ester resign infused double bias glass fabric/non-woven e-glass fiberglass reinforcements and PVC foam core construction. The hovercraft shall be designed and constructed as per class rules. ii) Full compliant with MARPOL and SOLAS regulations, as applicable. iii) All under water fittings, pipes, cables, bilge pumps etc are to be class approved type for marine intended applications resistant to rust and corrosion .iv) The upper and side deck layout/fitting craft-side and interior arrangements shall facilitate easy boarding operations and keep crew fatigue within acceptable parameters. v) The wheelhouse/ operator cabin of hovercraft shall have Armoured Protection to wheelhouse including Bullet proof glass. Ballistic panels and glasses shall be of NIJ- 111/EN 1063 standard (Non-metalic). Hovercraft should be rugged and stable to operate in all kinds of weather as per its op role and capability. It should have protection against sea salinity for operating in creeks/sea and rann. The primary structure for construction of hovercraft hull, tank, fore and aft shear walls, engine and fan mounting structure be manufactured of carbon fabric composite.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7 : _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification
		Deck to have nonskid surface. All stainless steel material should be of SS-316 marine grade or more.
14	CABIN	The hovercraft should have one closed cabin. The cabin should have following :- (i) The crew/control cabin should have the 8 person seating including pilot. (ii) Control panel with all alarms, gauges, navigation, communication and controls. (iii) Large wind shield for broader independence view for pilot and co-pilot. (iv) The wind shield wipers be of selective delay type alongwith spray wash facility. (v) The cabin should provide adequate all round observation and visibility from side. (vi) The layout of the cabin should permit firing of personal weapons in standing position from the cabin, through 4 to 6 port holes.
15	FLEXIBLE SKIRT	(i) Operator replaceable skirt segment made of Hypalon/Neoprene rubber/nylon fabric based material having resistance to wear & tear, saline proof. (ii) Skirts should be rugged against abrasion for employment in saline and silt laden waters. (iii) Cushion should be suitably subdivided to improve longitudinal and lateral stability to avoid ploughing in and facilitate getting over the hump while launching with minimum delay. (iv) **Skirt damage** –The ACV should be capable of operating as a conventional boat with 50% skirt damaged and should be able to operated as an ACV with 15-20% skirt damage,.
16	**NAVIGATIONAL EQUIPMENT**	All the navigation lights of hovercraft should be fitted in accordance with international regulations for preventions of collision at sea. A navigation light control panel should be installed in the control cabin.
	a) Navigational Light	(1) Navigational Lights (Fwd, Mast and side lights). (2) Magnetic Compass (with azimuth circle). (3) DGPS Receiver (Fixed Installation)
	b) GPS	One DGPS which provides accuracy up to 0.5 metre be provided.
	c) Anemometer	One Anemometer of pressure differential or Ultrasonic frequency type be provided.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

26

S/No		QRs/Specification
	d) Meteorological Instruments.	The following meteorological equipment be fitted on board in the control cabin:- (a) Barometer. (b) Wet and dry bulb thermometer. (c) Hygrometer
	e) Search Light	Three (fwd, port and stbd) xenon lamp operated, rechargeable and remotely operated with joy stick, search light should be provided with minimum 500 Meter visibility.
17	**LIFE SAVING**	Lifesaving arrangements should be as per military standards. Equipment should also conform to SOLAS / IMO standard. The craft should be equipped with:- (a) Rigid buoyant life jackets (Vest type zip above) – 12 Nos (b) Life buoy - 4 Nos
18	**FIRE FIGHTING**	As per class requirement.
19	**ALARM SYSTEMS.**	(i) Hovercraft should have an alarm for all critical systems / machinery on the control cabin console (ii) Audible fire warning and alarm system to be provided.
20	**ANTI FLOODING/ BILGE SYSTEM**	(i) On-board bilge pumps of high capacity to be provided for pumping water for firefighting purpose/ bailing out water to prevent on board flooding. (ii) One spare electrically operated pump of adequate capacity to be situated in main cabin for emergency use.
21	**RAILING**	Appropriate railing of light metal SS-316 or superior grade are to be provided on main deck and other required spaces.
22	**MOORING**	Suitable anchoring arrangement up to 20 meters be provided for prolonged anchoring for Recce / Surveillance operations. Towing posts & mooring rings to be provided at bow & stern. At least 04 nos. each bollards cleats, fairleads of stainless steel are to be fitted on main deck. Mooring towing ropes of sufficient length to be provided.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M 6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification
	MOORING AND ANCHOR	(a) Anchor. One stockless anchor be provided in the forward part of the ACV capable of being manually released and retrieved with required amount of chain cable of sufficient strength as per Classification Society rules. (b). Mooring Arrangements. Hovercraft should have arrangements to be towed or tow other similar vessels. (c) Slinging Arrangements. The design plan shall indicate the four point lifting/slinging on the hull. Mast.-A suitable mast be provided on the bridge top. The mast should be retractable/ foldable. Suitable aluminium ladder be provided for easy embarking and de-embarking.
23	DISPLAY / INDICATORS AT OPERATOR CABIN	Following instrument & Indicators should be available at operator console: a. RPM indicator. b. GPS. c. Echo sounder depth indicator. d. Pitch control indicator. e. Rudder control indicator. f. Fire alarm. g. Flooding and smoke indicator. h. Starting / stopping switches of all machinery / equipment.
24	PAINT	Main structure to be provided with epoxy paints/gel coat. Personnel movement routes are to be painted with non-skid paints, hull with anti-fouling paint. The name, ID No. and BSF Emblem shall be fixedon both sides of the Hull at superstructure at appropriate places.
25	COLOUR SCHEME	Following colour scheme is to be adapted: a. Superstructure -Disruptive Green Amphibious pattern b. Interior of Living & operating spaces - Off White / Light Cream
26	NOISE LEVEL	The ACV should be designed for lowest possible noise levels to suit overt operations and the noise levels in the main cabin and wheel house shall be as per class rules.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No	QRs/Specification	
27	ABLUTION FACILITY	Single marine toilet facility to be included in QR.
28	JACKING ARRANGEMENT	Specially designed hover over maintenance stands should be provided to carry out/enable underside maintenance.
29	MAIN ARMAMENT	An arrangement is to be provided to facilitate fitment of a LMG with all clear firing ARC.
30	AUXILIARY POWER UNIT	Diesel driven portable APU to be provided to charge batteries and provide power supply when engines are not in operation/for support at harbour.

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

M-1:-
(Rajeev Tiwari),DC, CRPF

M-2: Not attended
( ),
NSG

M-3:-
(Ved Prakash), AC, SSB

M-4 :-
(Prithvi Chand), Sub/VM, Assam Rifle

M-5 :-
(Mahavir Singh), AC, CISF

M-6 :-
(Ravindra Kushwaha), AC, NDRF

M-7:-
(Amit Gupta), DC, ITBP

M-8:-
( )
BPR&D

M-9:-
(N C Sundar Singh),DC(WW),
FHQ BSF New Delhi

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

APPROVED / NOT APPROVED

Director General
Border Security Force

Appendix - C

QRs/TECHNICAL SPECIFICATION AND TRIAL DIRECTIVES/PROCEDURE OF HOVER CRAFTS

S/No	QRs/Specification		Trial Directive/Procedure
1	FUNCTIONS	Combat Hovercraft to carry 8 men including crew and have capability to negotiate mangroves of Creek. It should offer faster response time and can be effective in sir creek area of Gujrat Ftr and move in areas not affectively patrolled by Watercrafts/Boats. It must offer mobility and speed to detect and deter infiltrator and smugglers moving near border.	
2	CLASSIFICATION	The Vessel shall be built to comply class rules of IRS. or equivalent IACS members like ABS/DNV/BV etc.	Class approval certificate to be obtained.
3	SEA WORTHINESS	The hovercraft should be capable to operate up to Sea States 3.	Class approved certificate to be provided by builder.
4	STABILITY	Fulfill all stability requirements specified by the Classification Society or other equivalent authorities.	Test reports of class society/trial.
5	GENERAL DIMENSIONS	a) Length (m) hovering - not more than 9 Meters b) Beam (m) hovering - not more than 5 Meters c) Max height (m) - not more than 5 Meters d) Passenger (including crew) - 8 person e) Maximum payload(Tonnes) - not less than 1 ton f) Normal endurance(hours) at cruising speed - 8 hrs at full payload g) Obstacle clearance - not less than 0.4 Meter	Check with measuring steel tape in calm water and tally with approved drawing. Endurance & Obstacle clearing capacity to be checked during maneuvering trials
6	PROPULSION	The craft is to be driven by variable pitch propeller powered by air/water cooled turbo charge, 2 x CRDI Diesel engine. Propulsion system must be class approved.	To be certified by OEM/Class society. To be checked during field trial.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification	Trial Directive/Procedure
	i) Control	Directional control be achieved by moving rudders suitably mounted, which operate in the propeller ship stream. Additional control at low speed should be provided by skirt lifting system and side control posts or handlebar steering type with easy operation to be provided.	Check its functionality during field trial.
	ii) Propellers.	Propulsion system should be variable pitch and full Reversible type. Propeller should be ducted blade controllable pitch type. Fans for propulsion, should be shrouded and additional safety screens provided in front of propellers to protect them from damage due to foreign bodies like fired ammunition cases.	Propulsion system performance trial to be conducted by running engine 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 an hour. Trials to be conducted as per class requirement.
	iii) Buoyancy	Craft should float while engine is switch off	To be checked physically.
7.	**SPEED**	The hovercraft should be capable of doing sustained speed not less than 25 knots for 08 hrs at full payload. (i) Top speed on water - 35 Knots (ii) Cruising speed - 25 Knots. (iii) Top Speed on land - 20 knots	Speed to be checked during speed trial in conditions up to sea state-2 with GPS during sea trials & by calculating the distance travelled & time taken.
8.	**MANEUVERING**		Braking distance, turning radius, pivot turning radius test and obstacle clearance to be carried out during maneuvering trials as per class requirement.
	i) Braking Distance	Fully loaded hovercraft should come to complete halt from full speed in distance not more than six times its length.	
	ii) Turning Radius	Hovercraft should turn 90 degree in water within the radius at speed indicated below (i) 25 Knots - 50 Mtrs (ii) 10 Knots - 25 Mtrs (iii) 5 Knots - 10 Mtrs	
	iii) Pivot turning	Static hovercraft should be capable to turn 360 degree at the same position while in water or on ground.	
	iv) Obstacle clearance	Able to clear obstacles such as sand bars and mudflats/bushes of heights not less than 0.4 Mtr.	

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No	QRs/Specification		Trial Directive/Procedure
9.	**MAIN MACHINERY SYSTEM.**	All machinery / Systems must be built as per drawings approved by the classification society.	
	i) Main diesel engine	Hover craft be equipped with liquid-cooled, turbocharged 2 x CRDI diesel engines for high speed application, class approved. The engine should be electric start type.	Full power trials of boat at 85% MCR and to be conducted for 60 min with recording of all system parameters. Class approved certificate to be provided by the boat builder.
	ii) Air conditioning system	A suitable air conditioning system for tropical condition be provided for Crew and passenger cabin.	Check AC plants, switch on-off (Repeat the process). Check temp in wheel house passenger cabin area compartment to test its functionality during field trial.
	iii) Batteries	All batteries be Maintenance free gel type.	Check battery charging facility and capacity of battery to meet automatic emergency lighting arrangements during field trial.
	iv) Light installation	The illumination of Light in crew spaces be in the range of 50 - 80 lux. Marine type LED lighting be installed.	To be checked physically during field trial.
	v) Emergency lights	The emergency light be installed according to the Classification Society requirements.	To be checked physically during field trial.
10	**ENDURANCE**	Endurance should be at least 200 NM or 8 Hours of operation at cruising speed of 25 Knots.	Trial to be carried out for 2 hrs at cruising speed with full load (man & materials with equipments) during speed trial, distance travelled & fuel consumed to be recorded. Check & calculate fuel tank capacity accordingly whether it meets endurance requirements and fuel tank capacity during field trial.
11	**FUEL TANK CAPACITY**	To meet the endurance plus 25% reserve.	
12	**PAYLOAD**	Should not be less than 1 ton. Payload to include first line ammunition of one LMG, weight of 8 personnel including personal kit arms and ammunition @ 90 kg /person and other essential items.	To be checked physically during field trial.
13	**CONSTRUCTION AND MATERIAL**	i) The hull is to be made of vinyl ester resign infused double bias glass fabric/non-woven e-glass fiberglass reinforcements and	Check the hull physically in presence of Class representative. It should be as per

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No		QRs/Specification	Trial Directive/Procedure
		PVC foam core construction. The hovercraft shall be designed and constructed as per class rules.	class society recommendation.
		ii) Full compliant with MARPOL and SOLAS regulations, as applicable.	Check the material Certificate to this effect from the builder.
		iii) All under water fittings, pipes, cables, bilge pumps etc are to be class approved type for marine intended applications resistant to rust and corrosion	Type approved certificate to be provided by the boat builder if applicable.
		.iv) The upper and side deck layout/fitting craft-side and interior arrangements shall facilitate easy boarding operations and keep crew fatigue within acceptable parameters.	Check material used certificate issued by class society/accredited lab.
		v) The wheelhouse/ operator cabin of hovercraft shall have Armoured Protection to wheelhouse including Bullet proof glass. Ballistic panels and glasses shall be of NIJ- 111/EN 1063 standard (Non-metalic).	Check test/class report of SS items. It should be SS-316 to be produce by OEM.
		Hovercraft should be rugged and stable to operate in all kinds of weather as per its op role and capability. It should have protection against sea salinity for operating in creeks/sea and rann.	
		The primary structure for construction of hovercraft hull, tank, fore and aft shear walls, engine and fan mounting structure be manufactured of carbon fabric composite. Deck to have nonskid surface. All stainless steel material should be of SS-316 marine grade or more.	
14	**CABIN**	The hovercraft should have one closed cabin. The cabin should have following :- (i) The crew/control cabin should have the 8 person seating including pilot. (ii) Control panel with all alarms, gauges, navigation, communication and controls.	To be checked physically as per GA drawing. Check all equipment for its functionality during field trial.

PO : _____ M-1 _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 _____ Co-opted Member : _____

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S/No	QRs/Specification		Trial Directive/Procedure
		(iii) Large wind shield for broader independence view for pilot and co-pilot. (iv) The wind shield wipers be of selective delay type alongwith spray wash facility. (v) The cabin should provide adequate all round observation and visibility from side. (vi) The layout of the cabin should permit firing of personal weapons in standing position from the cabin, through 4 to 6 port holes.	
15	**FLEXIBLE SKIRT**	(i) Operator replaceable skirt segment made of Hypalon/Neoprene rubber/nylon fabric based material having resistance to wear & tear, saline proof. (ii) Skirts should be rugged against abrasion for employment in saline and silt laden waters. (iii) Cushion should be suitably subdivided to improve longitudinal and lateral stability to avoid ploughing in and facilitate getting over the hump while launching with minimum delay. (iv) **Skirt damage** –The ACV should be capable of operating as a conventional boat with 50% skirt damaged and should be able to operated as an ACV with 15-20% skirt damage,.	Material test report of class/accredited lab to be provided by the OEM.
16	**NAVIGATIONAL EQUIPMENT**	All the navigation lights of hovercraft should be fitted in accordance with international regulations for preventions of collision at sea. A navigation light control panel should be installed in the control cabin.	Check functioning of Navigation light during field trial. It should meet COLREG requirements.
	a) Navigational Light	(1) Navigational Lights (Fwd, Mast and side lights). (2) Magnetic Compass (with azimuth circle). (3) DGPS Receiver (Fixed Installation)	Examine the eqpt physically. Check type approval certificate of the Eqpts and carry out functional test during field trial.
	b) GPS	One DGPS which provides accuracy up to 0.5 metre be provided.	Check function of GPS during field trial.
	c) Anemometer	One Anemometer of pressure differential or Ultrasonic frequency type be provided.	Check functioning of anemometer during field trial.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7 : _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No	QRs/Specification		Trial Directive/Procedure
	d) Meteorological Instruments.	The following meteorological equipment be fitted on board in the control cabin:- (a) Barometer. (b) Wet and dry bulb thermometer. (c) Hygrometer	Test the functionality of equipment during field trials.
	e) Search Light	Three (fwd, port and stbd) xenon lamp operated, rechargeable and remotely operated with joy stick, search light should be provided with minimum 500 Meter visibility.	Check functioning and range of search light. Check remote operation and recharging facility during field trial.
17	**LIFE SAVING**	Lifesaving arrangements should be as per military standards. Equipment should also conform to SOLAS / IMO standard. The craft should be equipped with:- (a) Rigid buoyant life jackets (Vest type zip above) – 12 Nos (b) Life buoy - 4 Nos	(i) Lay out the buoys/jackets count and record. (ii) Check stowage area. (iii) Check class approved certificates. (iv) Random testing of kit be done to ensure functionality during field trial.
18	**FIRE FIGHTING**	As per class requirement.	Check physically during field trial.
19	**ALARM SYSTEMS.**	(i) Hovercraft should have an alarm for all critical systems / machinery on the control cabin console (ii) Audible fire warning and alarm system to be provided.	Check functioning of alarm systems.
20	**ANTI FLOODING/ BILGE SYSTEM**	(i) On-board bilge pumps of high capacity to be provided for pumping water for firefighting purpose/ bailing out water to prevent on board flooding. (ii) One spare electrically operated pump of adequate capacity to be situated in main cabin for emergency use.	Arrangement of bilge system is to be physically checked with the class approved drawing and functional test to be witnessed alongwith Class Rep during field trial.
21	**RAILING**	Appropriate railing of light metal SS-316 or superior grade are to be provided on main deck and other required spaces.	Check the certificate to be provided by the OEM.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

35

S/No	QRs/Specification		Trial Directive/Procedure
22	**MOORING**	Suitable anchoring arrangement up to 20 meters be provided for prolonged anchoring for Recce / Surveillance operations. Towing posts & mooring rings to be provided at bow & stern. At least 04 nos. each bollards cleats, fairleads of stainless steel are to be fitted on main deck. Mooring towing ropes of sufficient length to be provided.	Check anchor and mooring equipment, Bollard, Cleats, Fairleads and PP Ropes etc be checked physically during field trial.
	MOORING AND ANCHOR	(a) **Anchor**. One stockless anchor be provided in the forward part of the ACV capable of being manually released and retrieved with required amount of chain cable of sufficient strength as per Classification Society rules. (b). **Mooring Arrangements**. Hovercraft should have arrangements to be towed or tow other similar vessels. (c) **Slinging Arrangements**. The design plan shall indicate the four point lifting/slinging on the hull. **Mast**.-A suitable mast be provided on the bridge top. The mast should be retractable/ foldable. Suitable aluminium ladder be provided for easy embarking and de-embarking.	Check suitability of Anchor, mooring, slinging, mast and embarking ladder physically during field trial.
23	**DISPLAY / INDICATORS AT OPERATOR CABIN**	Following instrument & Indicators should be available at operator console: a. RPM indicator. b. GPS. c. Echo sounder depth indicator. d. Pitch control indicator. e. Rudder control indicator. f. Fire alarm. g. Flooding and smoke indicator. h. Starting / stopping switches of all machinery / equipment.	Check availability, fitments and functioning of indicators at operator console during field trial.
24	**PAINT**	Main structure to be provided with epoxy paints/gel coat. Personnel movement routes are to be painted with non-skid paints, hull with anti-fouling paint.	Check pattern of painting, craft name and BSF emblem during field trial.

PO : _____ M-1 : _____ M-2 : _____ M-3 : _____

M-4 : _____ M-5 : _____ M-6 : _____ M-7: _____

M-8 : _____ M-9 : _____ Co-opted Member : _____

S/No	QRs/Specification		Trial Directive/Procedure
		The name, ID No. and BSF Emblem shall be fixedon both sides of the Hull at superstructure at appropriate places.	
25	COLOUR SCHEME	Following colour scheme is to be adapted: a. Superstructure -Disruptive Green Amphibious pattern b. Interior of Living & operating spaces - Off White / Light Cream	Check physically during field tiral.
26	NOISE LEVEL	The ACV should be designed for lowest possible noise levels to suit overt operations and the noise levels in the main cabin and wheel house shall be as per class rules.	Check during field trial.
27	ABLUTION FACILITY	Single marine toilet facility to be included in QR.	Check physically during field trial.
28	JACKING ARRANGEMENT	Specially designed hover over maintenance stands should be provided to carry out/enable underside maintenance.	Check physically.
29	MAIN ARMAMENT	An arrangement is to be provided to facilitate fitment of a LMG with all clear firing ARC.	Check physically during field trial.
30	AUXILIARY POWER UNIT	Diesel driven portable APU to be provided to charge batteries and provide power supply when engines are not in operation/for support at harbour.	Check functions during field trial.

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

M-1: _____
(Rajeev Tiwari),DG, CRPF

M-2: Not attended
(_____), NSG

M-3: _____
(Ved Prakash), AC, SSB

M-4 : _____
(Prithvi Chand), Sub/VM, Assam Rifle

M-5 :- _____
(Mahavir Singh), AC, CISF

M-6 :- _____
(Ravindra Kushwaha), AC, NDRF

M 7: _____
(Amit Gupta), DC, ITBP

M-8:- _____
(_____) BPR&D

M-9:- _____
(N C Sundar Singh),DC(WW),
FHQ BSF New Delhi

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

APPROVED/NOT APPROVED

Director General
Border Security Force