

DRAFT REVISED QRs & TDs OF MINI REMOTELY OPERATED VEHICLE (MROV)

S No	Parameters	QRs/ Specification	Trial directives
1.	EOD surveillance	The Mini ROV should be able to carry out EOD and surveillance of the following structures/ installation:- (a) Inside aircraft and train. (b) Building and installation. (c) Bus station/Metro station/ Rly stn. (d) Passenger Terminals. (e) On ferries and ships. (f) Exterior and interior of all types of vehicles.	To be physically checked by the BOO.
2.	Weight of Mini ROV	The operational unladen weight of Mini ROV including control unit, battery and modular/ fixed arm should not be more than 110 kg.	To be physically checked by the BOO.
3.	Climbing of Mini ROV	Mini ROV should be able to climb up and down stair case of standard dimension and slope of at least 45 degree along with minimum weight of 8 Kg and should have provision of varying speeds for negotiating stairs/slope with and without load. The ROV should not topple while negotiating the stairs/ slope.	Mini ROV to be operated to climb up and down a stair case/ slope of at least 45 degree along with weight of 8 kgs.
4.	Boom extension	The unextended length of mini ROV should not be less than 1 metre and it should be extendable upto 2.5 m or more.	To be physically checked by the BOO.


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5.	Cameras	The Mini ROV should have the following video cameras:-	In addition to certificates from the OEM the parameters to be physically checked by the BOO.
	(a) Front and rear video cameras	Front and rear video cameras with IR capabilities and range of minimum of 3 meters. (i) Resolution : Minimum Full HD (ii) Field of View : $\geq 120^\circ$ wide-angle	
	(b) PTZ Camera (Optional) If user needs a fusion PTZ camera with day & night capability instead of only PTZ camera, the same will be supplied by the vendor at the option of the bidder.	PTZ fusion (day & night) camera having Tilt (-90 to $+90$ degrees) and PAN ($0-360$ degrees) with capabilities to recognize human form factor at minimum 200 meters. (i) Resolution : Full HD (1920×1080) or higher (ii) Optical Zoom: ≥ 30 (iii) PAN : Continuous 360° rotation (iv) Tilt : -90° to $+90^\circ$ (v) Low Light Performance : Starlight CMOS or equivalent (vi) Image Stabilisation : Electronic Image Stabilisation (EIS) (vii) Autofocus & Auto Exposure for dynamic scenes Optional : The camera should be programmed for target tracking	
	(c) Video camera at claw	Video camera at claw with thermal capability with capability to recognize human form factor at minimum 200 meters. (i) Thermal imaging capability (integrated or auxiliary) (ii) Detection range-Human form factor at min 200 mtrs. (iii) Optional laser pointer or digital scale overlay for depth perception. (iv) The claw of MROV should have facility to fix thermal camera as well as day camera.	
	(d) Aiming video camera	Aiming video camera for firing with IR capability and range of minimum 10 meters. (i) Resolution : Minimum Full HD. (ii) IR capability for night operations. (iii) Shock isolated mounting. (iv) Bore sight/ alignment Calibration capability. Method for bore sighting of weapon (electronic alignment of camera's optical reticle with exact center of the Gun barrel) with aiming video camera to be incorporated in design. OPTIONAL Requirement of type of mount for water disruptor to be specified by user during bidding.	

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6.	<u>Attachments</u>	The Mini ROV should have the following attachments:-	
	(a) Weapon mounting system	Modular mount for SMG/AK-47 or similar weapons system as specified by the user to be provided. The type of wpn intended to be used should also be provided by the user. Amn will be provided by the user/ indenter. The weapon/WJD/ RTVS will be tested for accuracy with ROV fully loaded (i.e, along with fully extended arm and necessary accessories)	To be physically checked by the BOO by firing five rounds of Amn each from SMG/AK-47 or similar weapons system.
	(b) De-Armr Disrupter mounting	Modular mount for De-Armr Disrupter to be provided.	To be physically checked by the BOO.
	(c) RTVS mounting	Modular mount for RTVS to be provided (Should be capable to take X-Ray with RTVS). Type/model of RTVS should be defined by user during pre- bid.	To be physically checked by the BOO.
7.	Laser aiming	Mini ROV should be able to aim with the help of both the camera and the laser aiming pointer.	To be physically checked by the BOO.
8.	Lifting capability	Mini ROV should have a lifting capability of minimum 8 kgs with telescopic boom fully extended (Horizontally).	To be physically checked by the BOO.
9.	Spot lights/ LED	The Mini ROV should have spot lights/ LED for both driving cameras and for aiming camera should be compatible with video camera.	In addition to certificates from the OEM the parameters to be physically checked by the BOO.
10.	Malfunction detection	The Mini ROV should have a malfunction detection and display unit.	To be physically checked by the BOO.
11.	Use of COFDM technology	Use of COFDM technology in data, audio & video transfer between the ROV and the base station.	OEM certificate for compliance will be the acceptance criteria.
12.	Optimum output	The Mini ROV should be able to give its optimum output in the under mentioned areas/ ranges:-	
	(a) Urban/ Built up area	Radio control in urban/ built up area up to 200 m.	To be physically checked by the BOO.
	(b) Open area	Radio control in open area up to 500m.	To be physically checked by the BOO.
	(c) Fiber optic control	Fiber optic control min-upto 200m with self-retractable cable assembly.	To be physically checked by the BOO.















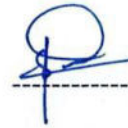
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	(d) Taking X-Ray	Capability to take X-Ray with X-Ray mount assembly/ Real Time Viewing System in all terrains.	To be physically checked by the BOO.
13.	EMI/EMC compatibility	The Mini ROV should be EMI/EMC compatible.	OEM to furnish certificate from any national/ international accredited lab.
14.	EOD options/ resources	Mini ROV should have the following EOD options/ resources with the claw:-	
		Pipe holding grip.	To be physically checked by the BOO.
		Spike grip.	To be physically checked by the BOO.
		Beak grip.	To be physically checked by the BOO.
		Box cutter.	To be physically checked by the BOO.
		Glass breaker.	To be physically checked by the BOO.
		Tyre Deflator.	To be physically checked by the BOO.
		Line for towing veh.	To be physically checked by the BOO.
15.	Power supply	The power supply of the Mini ROV should have the following:-	
	(a) Rapid recharge	Rapid rechargeable lithium-ion or better battery.	To be physically checked by the BOO.
	(b) Battery compatibility	The battery should be able to support all ops of the Mini ROV for a continuous duration of not less than 04 hours.	Mini ROV to be physically operated on battery for more than 04 Hrs.
	(c) Spare battery	Firm to provide spare battery for both Mini ROV and base station with charger.	To be physically checked and tested by the BOO.
16.	Microphone	Mini ROV should have a sensitive microphone to pick up acoustic signature within a radius of 15 feet of Mini ROV.	To be physically checked and tested by the BOO.

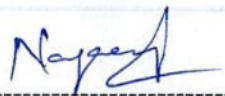










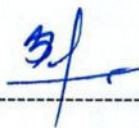




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17.	Base station	Base station of the Mini ROV should have the following features:-	
	(a) Weight	Compact and light weight.	To be physically checked by the BOO.
	(b) Control panel	Portable Hybrid (Wired and wireless both) control panel to be provided.	To be physically checked by the BOO.
	(c) Display unit	The display unit at base station should have LCD screen of min 15" with capability of simultaneously displaying at least 04 on board cameras in one screen and each camera output separately on the screen.	To be physically checked by the BOO.
	(d) Power	Capable of being powered on mains and bty both.	To be physically checked by the BOO.
	(e) Joystick control	Should have joystick control.	To be physically checked by the BOO.
	(f) Safety features	Should have inbuilt safety features.	To be physically checked by the BOO.
	(g) Operational controls	Should have essential operational controls.	To be physically checked by the BOO.
	(h) Listen and record the voice	Should have capability to listen and record voice signature being pickup by the microphone on board the ROV.	To be physically checked by the BOO.
	(j) Transmission of video	Should have a USB/HDMI port for transmission of surveillance feed being received from Mini ROV to command and control center.	To be physically checked by the BOO.
18.	Operating temperature	The operating temperature of the Mini ROV should be (-) 10 degree C to (+) 55 degree C	OEM to provide National / international accredited lab certificate.
19.	Environmental conditions	IP 65 or better	OEM to provide National / international accredited lab certificate.
20.	Carrying cases	Suitable non metallic (except Wooden) wheeled hard cases for safety of Mini ROV and associated accessories to be provided.	To be physically checked by the BOO.

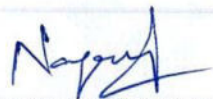














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21.	Miscellaneous	Miscellaneous. The firm will provide the following documents/ literature (in English language) alongwith the equipment:- (a) Technical manual with full description of all the item. (b) User handbook (c) Literature on care and preservation technique/ methods. (d) Specifications for packing handling/ transportation/storage. (e) Details regarding periodical check to be carried out by the user for serviceability of the equipment.	(a) For technical literature, undertaking by the OEM/firm, to provide the technical literature along with the delivery of the equipment will be obtained. (b) Remaining items to be physically checked by the BOO.
22.	Recording, Storage & Forensic Support	(a) Time and date stamping. (b) Exportable media suitable	To be physically checked by the BOO.
23.	System Integration & Modularity	(a) Camera modules shall be modular and replaceable. (b) Compatible with future sensor upgrades. (c) Minimal latency during live feed transmission.	To be physically checked by the BOO.
24.	Turning Radius	Zero Mtr (The ROV should be able to swivel around its vertical axis.	To be physically checked by the BOO.
25.	Negotiability	The MROV should be able to negotiate water logged surface having upto 150mm depth of water.	To be physically checked by the BOO.
26.	Ramp	Suitable Ramp will be provided by the vendor.	To be physically checked by the BOO.



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