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No. B.V-7-C/2025-26-C (C-UAV)-QR CELL

Dated, the 05 March'2026

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS /OEM/FIRMS ON DRAFT QRs & TDs OF "SMALL C-UAV (COMBAT - UNMANNED AERIAL VEHICLE)" REGARDING.

The Draft QRs/TDs of "**Small C-UAV (Combat - Unmanned Aerial Vehicle)**" 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 product against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details: -

- Whether you are OEM/Vendor?
- If vendor, details of OEM required.
- Authorization certificate from OEM.

2. The required information/details may please be forwarded at the following addresses by 09 **April'2026**.

Communication Directorate, CRPF
East Block-7, Sec-1, R.K. Puram, New Delhi-110066
Email: comncell@crpf.gov.in

3. An early response is requested.

(Megh Raj)
DIG (Equipment)
Communication & IT Branch
Directorate General, CRPF

Draft QRs/TDs of Small C-UAV (Combat - Unmanned Aerial Vehicle)

S.N.	Parameter	Specifications	Trial Directives
1	C-UAV (As a system)		
1.1	Aerial Vehicle-01 No		BOO will check practically.
1.2	Ground Control Station - 01 No		
1.3	Pay load assembly (a) Day Camera (b) Night Camera (c) Day & Night Camera Payload (both) (d) Integrated Day & Night Camera (e) Payload Capacity: Up to 06Kgs (As per user requirement)		
1.4	Remote Video Terminal (RVT) – 01 No		
1.5	Data link Equipment/ Antenna - 01 No		
1.6	Battery/Battery set for each Aerial Vehicle - 01 No		
2	Drone Characteristics		
2.1	Nomenclature	Small C-UAV (Combat-Unmanned Aerial Vehicle) (60 ± 5 minutes, with full payload capacity)	BOO will check practically.
2.2	Design	Rotorcraft	BOO will check practically.
2.3	Role	Combat C-UAV with ISR	BOO will check practically.
2.4	Launch and recovery mode (In meter)	Vertical takeoff and landing (VTOL) within the area of 15 X 15 m	BOO will check practically.
2.5	Aural Signature (in dB)	≤40 dbs at 300 m above AGL	The firm will submit certificate of Govt Lab. Or NABL accredited laboratory/or any other Indian authorized testing agency
2.6	Propulsion system	Electrical with rechargeable batteries	BOO will check practically
2.7	Payloads carrying capability	The payload should have gyro-based stabilization. Housing should be available for relevant payload with locking, and auto tracking of the selected target in the video imagery and dropping payload on the selected target.	Firm will submit OEM Certificate
2.8	Flight modes	(a) Fully autonomous and stabilized modes (b) Assisted flight modes (c) Hover at defined waypoint (d) Waypoint navigation (pre-defined as well as dynamically adjustable waypoints during flight)	BOO will check practically.

		(e) Target tracking mode: Real time target tracking of designated static and moving targets	
		(f) Remote Piloted Mode for video-based user navigation	
		(g) Should be controllable in real time from the GCS up to recovery	
2.9	Endurance (In minutes)	(i) Min. 60 Minutes \pm 5 Minutes with 4000 mtr AMSL OR (ii) Min. 60 Minutes \pm 5 Minutes with 5000 mtr AMSL	BOO will check practically
2.10	Operating altitude above ground level (AGL) (In meter)	Up to 1000m AGL or more	BOO will check practically
2.11	Maximum Launch altitude above mean sea level (AMSL) (in meter)	(i) 4000 m AMSL or more OR (ii) 5000 m AMSL or more	Firm will submit OEM certificate
2.12	Operating wind conditions (in km/h)	(a) Take off: 40 km/h or more (b) Landing: 40 km/h or more (c) Operate: 40 km/h or more	Firm will submit OEM certificate.
2.13	Cruise Speed (in km/h)	Minimum 45 Kmph or more	Firm will submit OEM certificate.
2.14	Collision Avoidance sensor	Integrated proximity sensors for obstacle avoidance	BOO will check practically and firm will submit OEM certificate.
2.15	Mission Range	(i) Minimum 10 Kms one way OR (ii) Minimum 15 Kms one way	BOO will check practically
3.0	Failsafe features	(a) Automatic change to recovery mode after 10 seconds on communication loss, resume mission if communication restore	BOO will check practically and firm will also submit OEM certificate
		(b) Configurable to complete the mission in autonomous mode despite communication failure	
		(c) Automatic Return to Home/Land on battery low/imbalance/sudden voltage drop	
		(d) Multiple GNSS on-board for failure redundancy	Firm will submit OEM certificate.
		(e) Warning on exceeding Wind limit or gust.	BOO will check practically and firm will also submit OEM

		(f) Warning on exceeding the UAV health parameters (Temperature, vibration, Battery, Motor and throttle limit of the system)	certificate.															
4	ISR Payload characteristics																	
4.1	Payloads Required	(a) Electro Optic (EO) for day (b) Thermal Imager (TI) for night payload (c) Separate EO & TI both (d) Integrated EO & TI (As per user requirement)	To be physically checked and verified by BOO.															
4.2	Payload and video stabilization	(a) Electronic and gimbal stabilization of video output at all zoom levels in real time (b) Locking and auto tracking of the selected target in the video imagery (c) 360° pan and 90° tilt control during flight for day and night payloads (d) UAV should transmit real time imagery to GCS (e) Quality of video should not be affected by UAV vibrations	To be physically checked and verified by BOO.															
4.3	Electro optic (EO) daylight payload	(a) Resolution: 1920X1080 pixels or better	Firm will submit OEM certificate.															
		(b) Optical zoom: 30X or more with minimum NFOV 5°, maximum (wide field) WFOV ≥ 45° Digital zoom: 4X or more	Firm will submit OEM certificate.															
4.4	Thermal Imager (TI) night payload	(a) Resolution: 640X512 pixels or better	Firm will submit OEM certificate.															
		(b) Digital zoom: 4X or more	To be physically checked and verified by BOO.															
		(c) White and Black hot modes	To be physically checked and verified by BOO.															
4.5	DRI/ Operating Range	<table border="1"> <thead> <tr> <th colspan="3">Day Payload</th> </tr> <tr> <th></th> <th>Vehicle size (4.5 m X 1.5m)</th> <th>Group of 3-4 People</th> </tr> </thead> <tbody> <tr> <td>Detection</td> <td>4000m</td> <td>3000m</td> </tr> <tr> <td>Recognition</td> <td>3000m</td> <td>2000m</td> </tr> <tr> <td>Identification</td> <td>1500m</td> <td>1000m</td> </tr> </tbody> </table>	Day Payload				Vehicle size (4.5 m X 1.5m)	Group of 3-4 People	Detection	4000m	3000m	Recognition	3000m	2000m	Identification	1500m	1000m	BOO will check practically, the picture quality for detection, recognition and identification. Detection- Ability to distinguish an object from background. Recognition- Ability to classify the object class (Animal, Human, Vehicle, Boat, etc.). Identification: Ability to describe the object in detail (man with weapon, hat, uniform/ colour of clothes, type/ colour of vehicles, etc.)
Day Payload																		
	Vehicle size (4.5 m X 1.5m)	Group of 3-4 People																
Detection	4000m	3000m																
Recognition	3000m	2000m																
Identification	1500m	1000m																

			BOO will check practically, the picture quality for detection, and recognition. Detection- Ability to distinguish an object from background. Recognition- Ability to classify the object class (Animal, Human, Vehicle, Boat, etc.).
		Night Payload	
		Detection	1500m 1000m
		Recognition	1000m 800m
4.6	Interchangeable Payloads	Payloads should be plug and play and should be interchangeable easily	To be physically checked and verified by BOO.
4.7	Payload Control	(a) Selection and switch on/off of payload	To be physically checked and verified by BOO.
		(b) Pan/Tilt/Zoom Control	
		(c) Recording on/off	
		(d) Switch on/off night Recovery Beacon	
5. Combat Payload Characteristics			
5.1	Payload specification for Combat	Payload Capacity (i) 01 X Up to 6 Kg OR (ii) 03 X Up to 2 Kg (With plug and play attachment to select any of the above two combat options, along with camera payload)	To be physically checked and verified by BOO.
5.2	Payload Dropping	Combat/Explosive payload should be droppable with a single click/ command/ button	To be physically checked and verified by BOO.
6 Ground control station characteristics			
6.1	GCS	GCS should be Robust and Portable.	To be physically checked and verified by BOO.
6.2	CPU	Clock Speed minimum 2.3GHz or better	To be physically checked and verified by BOO.
6.3	Ruggedness	Mil-STD 810G	Firm will submit certificate of Govt. lab. or DRDO or NABL/ ILAC accredited lab.
6.4	Screen	Anti-glare, sun light readable, Min 1000 nits or better, Touch Screen 10" minimum (Tablet or Laptop, as per user requirement), Full HD Display or better with IP 65 rating or better	Firm will submit OEM certificate.
6.5	Map	Should be able to overlap ground data with Geo-Spatial data	To be physically checked and verified by BOO.
6.6	Recording Playback	& Ability to record, instant playback and freeze data	To be physically checked and verified by BOO.

6.7	Storage	500 GB Digital Mass Storage with 8 GB RAM or better	To be physically checked and verified by BOO.
6.8	Data Transfer	Availability of USB, HDMI, Ethernet (10/100/1000), IEEE, 1394A ports for transfer/exchange of data	To be physically checked and verified by BOO.
6.9	Battery Charging	Suitable battery charger using normal commercial supply	To be physically checked and verified by BOO.
6.10	Battery Backup	Battery backup at least 4 hours or better	To be physically checked and verified by BOO.
6.11	Joystick control	(a) Full Camera Control	To be physically checked and verified by BOO.
		(b) Pan/Tilt	
		(c) Zoom In/Out	
		(d) Black/White Hot Modes	
		(e) Altitude Control	
		(f) LRF Control	
6.12	Remote Video Terminal (RVT)	(a) Compact, Lightweight & Portable Tablet with anti-glare, sun light readable Min 1000 nits or better, touch screen 10" full HD Display or better with IP 65 rating or more and MIL-STD 810G or more.	To be physically checked and verified by BOO Firm will submit certificate of Govt. lab. or DRDO or NABL/ ILAC accredited lab for MIL-STD 810G or more and IP65 or more.
		(b) UAV should be able to transmit video to RVT at a minimum distance of 3Km or more from UAV.	
		(c) RVT should have the capability to display video, map and on screen display similar to GCS.	
		(d) Capability to record, playback, and freeze the imagery received from the AV.	
		(e) Should be able to overlap ground data with Geo-Spatial data	
		(f) 128 GB Digital Mass Storage with 8 GB or better RAM	
6.13	Map Formats	(a) Capacity to integrate all kinds of Geo-Referenced Raster Maps in commonly used digital formats (GIF, TIFF, DTED & SRTM etc.)	Firm will submit OEM certificate.
		(b) Compatibility to Google Map and auto-download map of specific location through GPS	To be physically checked and verified by BOO.
		(c) Ability to display 3D maps with the digital terrain data provided. Option to switch between 2D & 3D maps in real time.	To be physically checked and verified by BOO.
		(d) Capability to zoom/ tilt/ rotate 3D maps	To be physically checked and verified by BOO.
6.14		(a) Able to control all aspects like pre-flight checks, self-tests, control of take-	(a) To be physically checked and verified by BOO

	GCS Application Software	<p>off/landing, payloads and output: go/ no go.</p> <p>(b) The software should provide the following mission information:</p> <ul style="list-style-type: none"> (i) Target coordinates (ii) GPS Accuracy +/-10m (iii) AV Position and distance from GCS (iv) AV operating data (v) Wind speed (vi) Mission time (vii) Payload looking angle (viii) Communication link status (ix) GPS status (x) Battery status (xi) Geographic map and real time video should be displayed at all times during the flight (xii) Geographic map and real time video views should be resizable and/or switchable to allow user to switch between big map/small video and small map/big video views through a single click/button input (xiii) Perpetual proprietary software of the system product support for minimum 05 years. (xiv) AI/ML capability for identification & detection of targets/humans/friendlies/point of interest, etc. 	<p>(b)- (i) to (xii): To be physically checked and verified by BOO.</p> <p>(b)- (xiii): Firm will submit OEM certificate</p> <p>(b)- (xiv): To be physically checked and verified by BOO. Further, firm will also submit OEM certificate</p>
7. Communication Link			
7.1	Encryption	Secure, between Aerial Vehicle and Ground Control Station with 256-bit encryption	<p>To be physically checked and verified by BOO.</p> <p>and</p> <p>Firm will submit certificate of Govt. lab. or DRDO or NABL/ ILAC accredited lab.</p>
7.2	Operating Frequency	Operable in S-Band or C-Band frequency for uplink and downlink Shall also support FHSS	<p>To be physically checked and verified by BOO.</p> <p>and</p> <p>Firm will submit certificate of Govt. lab. or DRDO or NABL/ ILAC accredited lab.</p>
8. Video: Should have following functionality			

8.1	Video	(a) Video should be recorded in any common portable video formats (AVI/MPEG/MP4 etc.)	To be physically checked and verified by BOO.
		(b) Video of the full flight should be recorded	To be physically checked and verified by BOO.
		(c) Should have capability to take image snapshots/ screenshots at any time during flight	To be physically checked and verified by BOO.
9. <u>Electronic Counter Measure (EW features) (optional)</u>			
9.1	GNSS Denied/ Spoofed Navigation	(a) Shall be capable of detecting GNSS jamming and spoofing. (b) Resilient to GNSS jamming and Spoofing. (c) Shall support autonomous navigation in GNSS denied/ spoofing environment and/or Return to Home in GNSS denied/spoofed environments. (d) Inertial Navigation System (INS) and velocity-based sensor system. (e) Drone should be capable of operating from Take-off to Landing	Board will check practically and firm will also submit OEM certificate.
9.2	RF jamming	Support Frequency hopping to establish communication in jamming environment.	Board will check practically and firm will also submit OEM certificate.
10. General System requirements			
10.1	Weight (In kgs)	Complete weight of the UAV system should not be not more than 60 kg in three IP 66 backpacks (including: (i) Aerial vehicle (ii) All Payloads (ISR & Combat) (iii) Spare Battery (Battery Set) -2 Nos. (iv) GCS (v) RVT (vi) Data link equipment/ Antenna (vii) Cables/spares/ Accessories	BOO will check practically.
10.2	Assembly/ Disassembly time	Up to 20 minutes with 2 personnel	
10.3	Environmental conditions for operation and storage	The UAV and associated systems should operate and be stored at following environment conditions. (a) Damp heat: 40°± 2°C at RH not less than 90% as per JSS 55555 or equivalent standard	Firm will submit certificate of Govt. lab. or DRDO or NABL/ ILAC accredited lab.

		(b) Operating temperature & Storage temp: (i) -10°C to +55°C with ±10%. OR (ii) -20°C to +55°C with ±10%. as per JSS 55555 or equivalent standard	
10.4	IP (Ingress Protection) of the UAV	IP 54 or better	
10.5	Battery of AV	(a) The intelligent standard Lithium based battery pack should have the backup of minimum 60 minutes ± 5 minutes (b) Life of Battery minimum 300 charging cycles or 2 year whichever is earlier. (c) Battery life cycle should not be programmed in BMS	Firm will submit OEM Certificate.
10.6	Battery charger and charging time of AV battery	Suitable universal battery charger to charge the batteries within two to three hours	BOO will check practically and firm will submit OEM certificate.
10.7	Accessories	(a) Field repair kit: 1 Nos	BOO will check practically
		(b) Spare Lithium based battery packs (Battery Set) - 2 Nos.	BOO will check practically
		(c) Spare propeller set: 1 Complete set	BOO will check practically
		(d) Spare landing gear sets: 1 Complete set	BOO will check practically
		(e) Associated cables & mounting: 1 Set	BOO will check practically
		(f) User, technical & maintenance manual: 1 set	BOO will check practically
		(g) Water-resistant (IP 66) back packs to carry UAV along with accessories - 03 Nos	Firm will submit certificate of Govt lab or NABL/ILAC accredited laboratory
		(h) Rugged, Compact and light weight transportation box- 03 Nos	BOO will check practically
11.	Miscellaneous requirement		
11.1	Total technical life	Minimum 1000 landings	Firm will submit OEM Certificate.
11.2	Total product support	05 years or more as per user requirement.	Firm will submit OEM Certificate.
11.3	Manufacture recommended list of spares (MRLS) with cost	Should be provided.	BOO will check practically and firm will also submit OEM certificate

11.4	Warranty	02 years or more (as per use requirement)	Firm will submit OEM Certificate.
11.5	Training simulator (Optional as per user requirement)	Suitable simulation software module to be provided for operator training.	BOO will check practically