EXPRESSION OF INTEREST FOR MINI UNMANNED AERIAL VEHICLE (UAV) FIXED WING (VTOL)

1.   The CRPF is planning to procure MINI UNMANNED AERIAL VEHICLE (UAV) FIXED WING (VTOL). With a view to identify probable vendors who can undertake the said project, the OEMs/Vendors are requested to forward information on the product which they can offer. The parameters/broad specifications of the item are mentioned in the questionnaire attached as **Appendix 'A'**. In addition the vendors are required to furnish details as per Performa at **Appendix 'B'**.

2.   Apart from the information as per the Appendices the vendors are also requested to forward technical details / product brochures / literature etc pertaining to the item in question.

3.   The required information / details may please be forwarded, in hard and soft copies (CD) at the following addresses by 8 June 2017.

Directorate General CRPF
Block No.1 CGO Complex, New Delhi – 110003
(Tele/Fax: 011-24366630
Email: comncell@crpf.gov.in

4.   An early response is requested.

MINI UNMANNED AERIAL VEHICLE (UAV) FIXED WING (VTOL)

Sl No	Parameter	Specification.	Reply of Firm/ Vendor	Remarks
1.	UAS (UAV as a System)	The UAS should consists of :- a. The Aerial Vehicle b. Portable Ground Control System (PGCS) with suitable antenna-01 No. c. Compact remote video terminal (RVT)- 01 No d. Suitable launch and recovery system : VTOL e. Complete set of payload with each aerial vehicle. f. Adequate spares along with the necessary storage and carriage paraphernalia. g. Rugged, Compact and lightweight transportation box capable of accommodating whole UAS to enable Safe and Hassle free transportation of UAS by Air/Rail/Road. h. Dedicated back packs for carrying UAS by UAV Team in field operations.		a) Specify number of Aerial Vehicles which can be operated simultaneously f) Specify spares h) Specify number of back packs
2.	Physical Characteristics General	a. The UAV should be simple, compact, light weight, modular with a rugged and proven design. b. The UAV should be capable of rapid deployment with a detachment not exceeding three men. c. The UAV should have day and night operations capability.		
3.	Endurance	The UAV should have a minimum endurance of minimum 90 minutes with loiter time of min 60 minutes with max payload.		Specify minimum endurance
4.	Mission Range	Minimum of 10 km in Diagonal line of sight from point of launch.		
5.	Weight and external Dimensions	Weight of the following assembly taken all at a time UAV (1 No) +Day and Night Payloads+PGCS (1 No) +RVT (1 No)+ backpacks for carrying UAS in field operations The UAV should have dimensions in commensuration to its weight, speed and endurance such that it should ensure easy handling and transportation by vehicles and aircrafts. It should be packable in dedicated back packs.		Specify complete weight (Excluding weight of transportation box). Specify number of backpacks

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6.	Speed	The UAV should be able to undertake Take-off, flight and landings upto wind speed of 20 knots. The UAV Should have minimum cruise speed of 20 Knots or more while ensuring the clarity and stability in transmission of video footage to RVT. It should have location loiter facility.		Specify the speed
7.	Standard Operating Altitude above sea level (ASL)	Operational Altitude: 500 feet to 6000 feet AGL (Above Ground Level)		Specify launch altitude from Mean sea level
8.	Operating and Storage Temperature	Minus 5 degrees centigrade to plus 55 degrees centigrade.		
9.	Reconnaissance and Surveillance	The UAV should be capable of carrying out day and night real time reconnaissance and surveillance of an area of interest. For this UAV should transmit real time imagery to GCS with 1) Day Payload. 2) Night Payload. 3) Fusion camera for both day and night surveillance		Specify resolution of Day payload and night payload separately
10.	Target Detection, Recognition, Identification and Acquisition.	The system must be able to detect and acquire the designated targets. The sensor packages must provide a high quality Imagery resolution to permit target detection, recognition, identification and accurate location of fixed targets, move of personnel and vehicles. The resolution should be such that human & vehicle targets are observed as following criteria:- <table><tr><td>Criteria</td><td>Vehicle and Group of 3-4 People (Day)</td><td>Vehicle and Group of 3-4 People (Night)</td></tr><tr><td>Detection</td><td></td><td></td></tr><tr><td>Recognition</td><td></td><td></td></tr><tr><td>Identification</td><td></td><td></td></tr></table>		Specify distance for each criteria

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11.	Air Vehicle (AV)	The UAV should be easy to handle and should have low noise (<40 db) at 300 meter to avoid detection and engagement by adversary. Air frame should be made of composite material or any other strong rugged light weight material and be rugged, durable and robust. The parts should be modular and easy to replace and maintain. It should have suitable secure data link to communicate with PGCS. Fitment, removal and replacement of sensors should be quick and simple easily executable in field conditions.		Specify the encryption mode
12.	Flight Modes:	The AV should be able to operate in the following flight modes a. Fully Autonomous Mode b. Semi Autonomous Mode. c. Loiter Mode. d. Target Seeking Mode. e. Camera Guide Mode. f. Return Home Mode.		
13.	Propulsion	The UAV is to be powered by battery.		
14.	Portable Ground Control Station (PGCS)	The PGCS should be based on GPS and it should be able to control all aspects of UAV system operation like pre-flight checks, equipment self tests, take off/landing control of AV and payloads. It should have advance mission planning software features. It should provide secure communications for AV control and tracking, sensor operation and navigation. The PGCS should be based on ruggedized portable computers and should be capable of operating in a standalone mode. It should facilitate recording and replay of sensor data. Suitable ports should be provided for taking the data out on a network in the form of video freeze frames/video clipping. The PGCS should have the following:- a. Power supply system should cater for continuous operation with adequate back up. b. The instrument should have trackball/ joystick /touch screen controls for operating various flight control modes and payloads and a Ruggedized Laptop/ tablet. c. Digital Mass storage for recording live Imagery along with metadata/telemetry and still Image data received from the sensor and mission flight date for post flight analysis capability. Capacity of recording data of multiple missions in MPEG4 or any other suitable format. Data transfer of recording to be downloadable to external storage and display systems by operator.		a) Specify duration in hrs c) Specify recording capacity.

		d. Self test facility for PGCS.		
		e. Compact RVT or wrist mountable video gadget. Should have ability to overlap the ground video data with geo-spatial data available.		e) Preferable
		f. It should have suitable antenna.		f) Type of antenna be specified
		g. PGCS should be rugged with water and dust resistant design for the flexibility to work freely in nearly any environment. The display screen should be multicolour, anti glare and sunlight readable.		g) Specify standards
15.	Data-Link for UAV	a) UAV should have a suitable data uplink and telemetry and video down link with PGCS with a range of Minimum 10 km LOS. The data link (Uplink and downlink) should be secure and should enable automatic tracking of AV in flight to minimize loss of communication link.		Specify encryption and frequency band
16.	Programmed Flight Capability	The UAV shall be capable to- a. Operate successfully despite intermittent presence of in-band signals from other RF systems. b. Maintain secure communication link with PGCS to avoid deliberate attempts of jamming the up or down link and to reject attempt by an enemy to send commands to the air vehicle to prevent AV from crash, redirections/deviations. The UAV should have a facility of launching on a pre-programmed flight. The system should have dynamic programming in flight to provide flexibility for multi-mission planning. Slaving the UAV flight pattern to the payload LOS observation point so as to optimize payload image of the target should be permissible. The system should be capable of storing flight routes and each route may have multiple waypoints. The meteorological data for mission preparation should be configurable. The programming should also cater for loiter patterns in the target area. The system must have 'Manual Override facility or should be reconfigurable to permit over-ride of a pre-programmed flight at any time during the mission. GPS data should be integrated with data from mission specific sensors.		Specify number of flight routes and number of waypoints

S N	Parameter	Specification.	Reply of Firm/ Vendor	Remarks
17.	Safety	In case of emergency/break in communication during the flight, the system should automatically change to programmable 'Return Home' mode, till the communication gets re-established. In case of loss it should give a *radio beacon* which would assist its recovery. IR (Infra Red) strobe should be provided for night recovery or any other suitable alternative system which can assist in recovery of a lost UAV.		
18.	Stabilisation of Sensor	The sensor should have stabilized cameras capable of high quality Imagery and also to ensure auto locking and tracking of the selected target based video streaming. (a) Sensor Mounting Sensors should be mounted on adaptive modular payload platform and located at such a place where it should not sustain damage during rough landings. The mounting should have electrical/mechanical and software interfaces to accept other modular payload: (b)Sensor: a. Day CCD colour sensor with FOV angle and OPTICAL zoom. b. Standard IR/ Thermal Camera with FOV angle		Specify FOV angle and optical / digital zoom
19.	Compact Remote Video Terminal	The Compact Remote Video Terminal (CRVT) should be capable of being tuned to the UAVs downlink frequency. It should be light weight and portable computer based and be capable of the following:- a) Display payload output received from mission UAV. b) Record, play back and freeze the imagery and real time printing/editing of Imagery received from UAV. c) Outdoor sunlight readable video display		
20.	Launch and Recovery	UAV should be capable of Vertical Takeoff and landing.		Specify area for VTOL
21.	Ease of Operation	a. The system should be easily transportable and be man portable in dismantled configuration in back packs. b. The UAV should have an Inherent simplicity in launching, flight programming, basic operation and recovery. c. It should be possible to deploy UAV within shortest time to respond to a mission request from transportable condition by a two to three men team. d. It should be operable from within armoured vehicles with antenna outside		Specify number of backpacks c)specify time to deploy
22.	Miscellaneous	a. The warranty period of the UAV. b. Total Technical Life (TTL) c. Optional Equipment: Details of optional equipment with the equipment being offered, with benefits from its use. d. Repair & Maintenance. Repair and maintenance philosophy of the OEM to include periodicity of midlife interventions intent towards establishing maintenance hubs etc.		a) Specify warranty period b) Number of landings

INFORMATION PROFORMA

1. **Name of the Vendor/Company/Firm**.

    (Company profile, in brief, to be attached)

2. **Type (Tick the Relevant Category)**.

    (a) Original Equipment Manufacturer (OEM)   Yes ☐ No ☐

    (b) Government sponsored Export Agency   Yes ☐ No ☐
           (Details of Registration be provided)

    (c) Authorised Representative of OEM   Yes ☐ No ☐
           (attach details)

    (d) Other (give specific details)

    (e) Any collaborator/partner in India (in case of foreign vendors).

3. **Contact Details**

    Postal Address
    City:_____ Province :_____

    Country:_____ Pin/Zip Code:_____

    Tele:_____Fax:_____

    URL/Website:_____

4. **Local Branch/Liaison Office/Authorised Representatives in Delhi (if any)**.

    Name and Address
    City :_____   Province:_____

    Country:_____   Pin/Zip Code:_____

    Tele:_____   Fax:_____

5. **Financial Details**.

(a)   Annual turn over:_____ USD

(b) Earlier contracts with Indian Ministry of Defence / Government agencies:-

Agency	Contract Number	Equipment	Quantity	Cost

(c) Details   of   manufacturing   infrastructure available:_____

6. **Certification by Quality Assurance Organisation (If Applicable)**.

Agency	Certificate	Applicable from (Date & Year)	Valid till (Date & Year)

7. **Equipment/Product Profile (to be submitted for each product Separately).**

(a) Name of the Product:_____
(Should be given category wise for e.g. all products under night vision devices to be mentioned together)

(b) Description (attach technical literature) : _____

(c)Whether OEM or Integrator:_____

(d) Status (in service/Design development state): _____

(e)Production capacity per annum : _____

(f)   Countries where equipment is in service : _____

(g) Whether export clearance is required from respective government (Foreign Vendors only).

(h) In case of equipment and ammunition JV/MoU compliance to be specified.

(j) Details of any collaboration/joint venture/co production/ authorised dealer with Indian Industry (Foreign Vendors only):

Name & Address: _____

_____

Tele: _____   Fax:_____

8.   (a) Are you making the full equipment or is it being integrated by you? Give details.

(b)   What are the components, sub system or sub- assemblies of the equipment which are not manufactured by you? Please give details.

9.   Details of participation in similar procurement cases in India in the
      past.

10. **Any other Relevant Information**.