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**BRIEF OF PROJECT: PROCUREMENT OF INTEGRATED DRONE DETECTION
AND INTERDICTION SYS UNDER MAKE II PROCEDURE**

1. **Name of Proposal.** Integrated Drone Detection and Interdiction System.
2. **User Dte in SHQ.** Army AD Dte (AAD-10).
3. **Brief Description.** Integrated Drone Detection and Interdiction System comprises of an active and passive detection system for low Radar Cross Section aerial targets along with hard kill and certain soft kill options, integrated through a suitable Command & Control System. The system also included facility of cuing the existing Air Defence Guns, kinetic kill based drone interdiction system and High Power Microwave based counter drone system.
4. **Operational Justification.**
 - (a) Recent conflicts, both in conventional and sub-conventional domains have seen the emergence of drones and RPAS, ranging from small sized, commercial hand held drones to large military UAVs, as a decisive means of surveillance and del of munitions through the medium of air. Development is being undertaken, world over, to evolve cost effective Air Defence means to counter this emerging Air Threat. The fields of development including low Radar Cross Section detection, Radio Frequency Jamming, Directed energy weapons (Laser/ HPM) and kinetic solutions (Air Defence Guns / Drone Kill Sys).
 - (b) Army Air Defence is mandated to provide Air Defence protection to vital assets in tactical battle area and thus the operation criticality of seamless surveillance of airspace for detection of this low Radar Cross Section threat, alongwith suitable hybrid weapon system for interdiction of the threat, needs no emphasis. The operation requirement is getting further accentuated with our prolonged deployment along Northern borders. The integrated counter drone sys needs to have a command and control system integrated with suitable sensor system for low Radar Cross Section aerial threat, soft and hard kill options as also cuing system for other counter drone weapon system to including HPM, Air Defence Guns and Drone Kill System. Develop in the field of HPM weapon system is being undertaken by DRDO, whereas case for procurement of Drone Kill System is being progressed by Army Air Defence Directorate under Make-II procedure.
 - (c) The counter drone wpn sys already forms part of C-URAM troops of Army Air Defence units, as per the war establishments under process with ministry of defence for approval and adequate industrial and scientific capacity exists within the country to design, development and manufacture the Integrated Drone Detection and Interdiction System to meet the operational requirement of Indian Army.
5. **Approximate Quantity.** 54 (including one class room variant).
6. **Approximate Cost.** NK.

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7. **Technical Parameters.** The key operational / technology requirements of the proposed system are as under:-

(a) **Technology.** The integrated drone detection and interdiction system will comprise of the following subject system/ technologies:-

(i) **Surveillance & Detection System.** System for detection of low Radar Cross Section (RCS) aerial targets. The system will comprise of the following:-

(aa) **Active Radar.** Active Electronically Scanned Array (AESA) Radar, based on GaN T/R Modules & digital beam forming for detection and tracking of low RCS targets of 0.1 to 0.01 m² RCS.

(ab) **EO/ Infra Red System.** Visual detection and tracking system comprising of EO and Infra Red based cameras.

(ac) **Passive Radio Frequency Detection System.** System for passive detection and direction finder based on the radio transmissions made by the aerial targets.

(ii) **Interdiction System.**

(aa) **Laser based Hard Kill System.** Hard kill system based on High Energy Lasers.

(ab) **Soft Kill System.** The soft kill system will comprise of radio frequency jamming for communication and GPS frequency bands.

(ac) **Drone Spoofer.** Capability to manipulate and take over full control of ae drone.

(iii) **Command & Control System.** Suitable Command and Control System to effect integration and control of drone detection system, all hard and soft kill options and spoofer as listed above.

(iv) **Cueing for other Counter Drone System.** The system should be able to cue the following system:-

(aa) High Power Microwave based drone interdiction system.

(ab) Kinetic kill based drone interdiction system.

(ac) Existing Air Defence Gun System.

(b) **Range.** Capability of detecting and interdicting low Radar Cross Section (upto 0.01m²) drones/ RPAS, with following specs:-

(i) Detection and tracking range - Upto 10 Km.

(ii) Target interdiction range - Upto 5 Km.

(c) **Transportability.** Capability of transportation by road, rail, air, & sea. The system should be designed to facilitate ease of portability.

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- (d) **Target Handling Capability.** Tracking of upto 100 targets and engagement of minimum 20 targets simultaneously.
 - (e) The system should be capable of being mounted on vehicles/ High Mobility Vehicles.
 - (f) **Speed of Target.** Upto 80 m/s.
 - (g) The sys should be able to integrate with Air Defence Command and Reporting system.
 - (h) **Additional Information.**
8. **Indigenous Content.** ≥ 50%.
9. **Additional Information.**
- (a) Elevation Coverage - -5° to 70° .
 - (b) Operating Altitude - Upto 4500m.
 - (c) Operating Temperature - $(-)$ 40° C to $(+)$ 55° C.
 - (d) Operating Winds - Upto 40 Knots.
10. **Contact Details.**
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