Appendix

(Ref Para 2 of DGAC (AC-3) letter No A/36026/ISATS/GS/AC-3 dated ___Mar 2022)

QUESTIONNAIRE FOR DESIGN & DEVELOPMENT OF INTEGRATED SURVEILLANCE AND TARGETING SYSTEM (ISAT-S) FOR MECHANISED FORCES

1. **Company Details**.

(a) The category of the company, whether large/medium/small or Start Up.

(b) Years of existence (Established in _____).

(c) Annual turnover of the company.

(d) Annual profit in the last three financial years.

(e) Whether the company is OEM, manufacturing agency or system integrator.

(f) Experience of the company in related fields.

(g) Whether similar equipment has been supplied to any other government agency (Type of equipment, quantity and cost).

(h) Whether company has patents/IPR of any critical components/ sub-systems.

(j) Whether the company has any tie-ups/ Joint ventures with any foreign firm for producing similar equipment.

4. **Cost**.

(a) Cost of the prototype and the product (unit cost and total cost).

(b) Minimum quantity economically viable for business.

(c) Quantity of prototype recommended for user trials.

5. **Indigenous Content**.

(a) Likely achievable indigenous content at prototype as well as production stage.

(b) Details of important sub systems and enabling technologies of surveillance drone and loiter munition systems.

(c) Critical technologies identified for the system and details of critical technologies not likely to be available in India, to be sourced ex-import (in cost percentage terms).

(d) Sub-systems/equipment manufactured by the company and details of outsourced equipment along with details of the manufacturer.

(e) Details of Intellectual Property Rights (IPR).

6. **Time for Manufacture**. Likely time for development of the prototype (in weeks) and manufacturing of the product (per year capability).

7. **Explosive Licences**. Details of explosive licence for Loiter munition manufacturing companies to be provided.

8. **Broad Details/Technical Specifications of Existing Products/ Under Development or Capable of Being Manufactured**.

(a) **Surveillance Drone**.

(i) Configuration of the Drone - Multicopter/Fixed wing/Rotary wing/ Hybrid.

(ii) Launch mechanism - VTOL/Tube launched/canister launched and retrieval mechanism.

(iii) Power and propulsion system of the drone (IC engine/battery/hybrid).

(iv) Approximate dimensions and weight.

(v) Maximum operating range and endurance of drones with various propulsion systems.

(vi) Maximum take off altitude (in mtr AMSL).

(vii) Maximum operating altitude (in mtr AGL).

(viii) Temperature ranges in which drones can operate.

(ix) Payload capabilities to include :-

(aa) Size, wt, pan, tilt, resolution, zoom and Field of vision (wide and narrow).

(ab) Detection and Recognition ranges for A Veh, B Veh and human targets.

(x) Video freeze frames and recording of live feed.

(xi) The life of drones, in terms of landings/ hours, years and battery charging cycles.

(xii) Monitoring of health and location state of surveillance drone on GCS.

(xiii) Capability of the drone to operate under adverse weather conditions and wind speeds at which drone can operate.

(xiv) The navigation system and capability to operate in adverse jamming environment.

(xv) Various flight modes to include fully autonomous, semi auto mode, loiter mode, target following mode, camera guided mode, manual mode and Return to Home (RTH) mode.

(xvi) Method of takeoff and landing from an ‘A’ vehicle platform.

(xvii) Detail of casing for the svl drone and protection level which can be provided for protection against Small Arms and splinters.

(xviii) Artificial intelligence enabled target recognition and identification capability and capability of transmit the coordinates to the RVT and loiter munition.

(xix) Noise levels (in db) on ground while flying at various altitudes above ground level.

(b) **Loiter Munition**.

(i) Configuration of the loiter munition.

(ii) Details of launcher and launch mechanism - pneumatic or any other system.

(iii) Approximate dimensions and weight.

(iv) Range and endurance.

(v) Maximum take off altitude (in mtr AMSL).

(vi) Maximum operating altitude (in mtr AGL).

` (vii) Temperature ranges in which loiter munition can operate.

(viii) Details of EO/IR sensors and loiter capability.

(ix) Details of Anti tank warhead as under:-

(aa) Type of explosive.

(ab) Penetration capability of RHA plate in mm.

(ac) Capability to defeat Explosive Reactive Armour (ERA).

(ad) Safety aspects like in built Safe Arming Mechanism.

(ae) Circular Error of Probability (CEP) achievable.

(ae) Shelf Life of warhead.

(x) Monitoring of health and location state of surveillance drone on GCS.

(xi) Capability of the loiter munition to operate under adverse weather conditions.

(xii) Protection level which can be provided for protection against Small Arms and splinters to the tube.

(xiii) Artificial intelligence enabled target recognition and identification capability and capability to engage targets based on coordinates provided by surveillance drone.

(xiv) Capability to abort the mission, reuse capability and number of times loiter munition can be reused.

(xv) Are the loiter munitions likely to get damaged during recovery, if yes then likely damage and time to put it back into action.

(xvi) Capability of providing loiter munition with dummy warheads for training purpose.

(xvii) Radar Cross Section (RCS) details.

(xviii) Noise levels (in db) on ground while flying at various altitudes above ground level.

(c) **Remote Video Terminal (RVT)**.

(i) Technical specifications of RVT.

(ii) Weight and dimensions of the Remote Video Terminal (RVT).

(iii) The compatibility of the system with the Defence Series Maps and the map formats used (Raster, Digital Terrain Elevation Data -2 or Vector DGN).

(iv) Detail of frequency being used for the system.

(v) Details of security measures like data encryption, anti jamming and anti spoofing measures.

(vi) Compatibility of the navigation system with GPS/GLONOSS/IRNSS and capability of the system to operate in GPS denied/degraded environment.

(vii) Antenna specifications and possibility of interference with existing communication systems of tanks/Infantry Combat Vehicles.

(c) **Other Aspects**.

(i) Integration of surveillance drone and Loiter Munition on in service Armoured Fighting Vehicles and Infantry Combat Vehicles in the Indian Army.

(ii) Training of operators on existing system without requirement of simulators.

(d) Any other relevant details about the system, if not included in the Questionnaire may be provided.

9. **Contract Details**.

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