

APPENDIX E

EXDRONE

The EXDRONE UAV provides the tactical commander with limited day-only IMINT missions within 45 km of its GCS with minimum risk to capture, injury, or loss of personnel.

MISSION

The mission of the EXDRONE is to provide direct response to division and lower level tactical commanders, and perform R&S missions of a local nature. Other applications include—

- Maneuver support.
- Scouting and patrolling support.
- Target development and acquisition.
- Indirect fire adjustment to supported indirect fire weapons.

ORGANIZATIONAL STRUCTURE

There is no organizational structure for this UAV at this time.

EQUIPMENT

The EXDRONE system is arranged into three separate subsystems: the **air vehicle subsystem**, consisting of 10 Alveus and mission payloads; the **ground control subsystem**, consisting of equipment necessary to control and monitor the Alveus; and the **ground support subsystem**, consisting of a pneumatic rail or bungee launcher and supporting GSE.

Air Vehicle Subsystem:

The EXDRONE is a small, expendable, low-cost delta wing system that can be taken from its containers, assembled, fueled, and launched in approximately two hours by a six to eight man crew (see Figure E-1). It can dash to the objective area at a speed of 161 knots (kts), loiter in the area for two hours at a speed of 55 to 60 kts, and return to the launch area for recovery.

The flight control system consists of an uplink receiver connected to an autopilot and electrical servos, which remotely or autonomously activate flight control surfaces via push and pull rods. UAV attitude and altitude control is maintained during launch, climb out, and recovery by remote control through a 9-channel commercial pulse code modulation (PCM) controller. The powerplant is a small one-cylinder, two-cycle, air-cooled engine with a single blade propeller.

..... width, 63 cm in depth.

Weight 89 kgs.

Air vehicle carrying cases One for fuselage, one for wings.

The mission payload is a mini solid-state color video camera that provides a 30° FOV and a 23° azimuth-elevation coverage. The camera furnishes normal television line resolution for the horizontal and vertical of 360 lines and 350 lines, respectively. The camera has a low light sensitivity of 10 lux. Another mini video camera with the same features is attached to the belly of the airframe.

Ground Control Subsystem:

The ground control subsystem consists of equipment required to launch, control, and monitor during flight operations. It includes suitcase transported components, PCM controller, and mast-mounted uplink antennas. The suitcase components provide flight control and digital telemetry capability with NRT video image and digital displays. The digital displays include GPS information, the UAV's heading, altitude, rpm, and elapsed flight time.

Ground Support Subsystem:

The ground support subsystem includes equipment for autopilot programming, payload balancing, fueling, and launching of the Alveus. A hand held autopilot initializer programs the UAV for altitude and route; a center of gravity bar balances the UAV and payload for optimum flight performance; a DC operated pump is used for fueling the UAV fuel bladders and header tanks; and a three-wheeled dolly and bungee catapult assembly is used as an alternate launch method.

AIRSPACE MANAGEMENT

The airspace management procedures are the same as those discussed in Chapter 3.

OPERATIONS

The EXDRONE system is operated in a single site configuration (see Figure E-2). The NRT video is viewed and analyzed at the ground station video monitor, and INFLTREPs are sent out on reporting channels. In addition, any of the reports described in Chapter 2 can be submitted by the ground crew.

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