RQ-20, PUMA AE 3
OPERATIONAL, TECHNICAL, AND SERVICES AND SUPPORT CHARACTERISTICS
IN SUPPORT OF MARKET RESEARCH

Reliability and Production Characteristics:

1. Source(s) shall be capable of providing Full Rate Production (FRP) systems that satisfy all operational and technical characteristics.

Operational Characteristics:

2. Mission Support: System(s) shall provide near-real time imagery collection capabilities in support of Tactical Operations conducted by small maneuver units. For the purposes of this document, tactical operations shall include:

    a. Full Motion Video (FMV) and still image collection in support of Reconnaissance and Surveillance

    b. Target Acquisition and Marking

    c. Primary and Secondary Payload integration [as deemed appropriate]

3. System Deployment Characteristics:

    a. Transport: System(s) configuration shall be packaged in a manner that is easily transportable without the need for significant ground support equipment [i.e. dedicated vehicles, trailers, etc.].

    b. Assembly / Disassembly: System(s) hardware shall be easily assembled / disassembled without the use of tools.

    c. Personnel: System(s) shall be deployable in support of operations utilizing 2 or fewer personnel.

    d. Take-off / Recovery: System shall support dynamic take-off and recovery capabilities.

        i. Systems must be capable of takeoff utilizing hand launched in a tactical environment. Systems must possess the secondary

capability of executing takeoff via assisted means [i.e. Tactical launcher, Bungee Launcher, etc.].

ii. System(s) shall be runway independent and rapidly deployable without the need for supporting infrastructure.

iii. System(s) shall not require specialized ground-based support equipment to execute aircraft recovery / landing [i.e. nets, cables, etc.]. This does not include ground control stations and antennas required to perform aircraft command and control functions.

e. Weatherization: System(s) shall be capable of employment as a part of operations in austere environments.

i. System equipment shall be ruggedized with the capability of successfully supporting maritime operations.

ii. System equipment shall be ruggedized according to commonly held industry standards to mitigate potential failures and damage during use in a field environment.

4. System Survivability:

a. Auditory Detection: Aircraft and associated ground systems shall employ a low acoustic profile that enables covert system deployment. For the purposes of this document aircraft must be reasonably inaudible at 500 ft. AGL.

b. Visual Detection:

i. System(s) shall leverage a small human-machine-interface (HMI) footprint that minimizes the potential for ground detection. For the purpose of this document, the system HMI must be capable of being flown effectively from cover and concealment.

ii. System(s) shall leverage aircraft with a reasonably small visual cross section in flight. For the purposes of this document aircraft should comprise a grayish coloring, with an approximate length / wingspan of 4.6ft. x 9.2ft.

c. Datalink:

i. System(s) shall be capable of datalink encryption utilizing 256-bit Advanced Encryption Standards (AES) or better.

ii. Objective: System(s) shall support STANAG 4586 interoperability.

d. Navigation: System(s) shall be capable of supporting limited operations in Global Positioning System (GPS) degraded environment.

Technical Characteristics [System]:

1. Aircraft Form and Fit: Systems(s) shall comprise a group 1 UAS with a maximum gross takeoff weight of 20lbs or less.

2. Performance Characteristics:

    a. Flight Endurance: At a minimum, system(s) shall be capable of 2.5 hours of flight [per mission, per aircraft].

    b. Speed Capabilities:

        i. System(s) shall have a minimum speed range at or below 25 Knots (Kts).

        ii. System(s) shall have a maximum speed at or above 40 Kts

    c. Altitude Capabilities:

        i. System(s) shall support a standard operating altitude at or above 500 ft. Above Ground Level (AGL).

        ii. System(s) shall support a maximum altitude at or above 10,000 ft. Mean Sea Level (MSL).

    d. Range Capabilities: Aircraft shall be capable of operating 20 Kilometers [Electronic Line of Sight (ELOS)] or more from its controlling Ground Control Station (GCS).

    e. Payload Carrying Capacity: Aircraft shall have a payload carrying capacity of 4lbs (1.8kg) or greater.

3. Navigation Characteristics:

    a. System(s) software shall be capable of operator level mission analysis and flight planning.

    c. System(s) shall be capable of semi-autonomous flight. For the purposes of this document, semi-autonomous flight encompasses flight profiles that are stabilized by the aircraft's onboard avionics, but are dependent on operator inputs to support navigation.

d. Available system configuration(s) shall support the integration of secure Global Positioning System (GPS) Precise Positioning System (PPS) hardware.

5. Payload Characteristics: Primary system payload(s) shall support day / night imagery collection capabilities:

    a. Payloads shall support Infrared (IR) imaging capabilities at a resolution of 640 x 512 pixels and 32 degrees field of view (FOV) or better.

    b. Payloads shall support electro-optical (EO) imaging capabilities at a resolution of 15 megapixels, 56 – 1.2 degrees FOV, and 50x zoom or better.

    c. Payloads shall support low-light (LL) imaging capabilities at a resolution of 1.2 megapixels and 17 – 8.4 degrees FOV or better.

    d. Payloads shall support an 860 nm laser illuminator.

    e. Payloads shall support pan / tilt functionality encompassing 360 degrees of continuous horizontal rotation and (+) 30 – (-) 90 degrees vertical tilt.

6. Environmental Characteristics: System shall be capable of all-weather operations.

    a. Temperature Limits: System(s) shall be capable of operating in temperatures ranging from (-) 20 ºC – (+) 50ºC or better.

    b. Rain Limits: System(s) shall be capable of operating under conditions where precipitation is present for limited periods of time.

Services and Support Characteristics:

2. Training:

    a. Source(s) shall be capable of providing both Continental United States (CONUS) and Outside of the Continental United States (OCONUS) based Initial Aircraft Qualification Training (IAQT) and Instructor Training.

    b. Source(s) shall be capable of providing CONUS / OCONUS based Field Level Maintenance training to ensure system material and operational readiness is maintained. For the purposes of this document, field level maintenance shall encompass basic actions needed to sustain system

equipment during day-to-day operations. This includes system assembly / disassembly, installation / removal of line replaceable units (LRU). Field maintenance shall not include LRU or payload repairs.

3. System Sustainment/Support:

    a. Source(s) shall be capable of providing sustainment level maintenance support. For the purposes of this document, sustainment level maintenance is defined as action beyond the scope of day to day operations. This shall include advance troubleshooting support and system repair services.

    b. Source(s) shall be capable of providing Contractor Logistics Support (CLS) services in the form of consumables and spare parts packages.

    c. Source(s) shall be capable of providing OCONUS based Field Service Representative (FSR) support.

4. Data Deliverables:

    a. Source(s) shall be capable of providing structured training material.

    b. Source(s) shall be capable of providing a copy of written commercial warranties [as appropriate] for the proposed system.