

ANNEX 1
NOTIONAL LIGHT ATTACK REQUIREMENTS

1. Aircraft Attributes of Interest (AAI)

- a. Light Attack. The aircraft must be capable of:
 - i. Continuously computed impact point (CCIP) and/or continuously computed release point (CCRP) employment of MK81/82, BDU-33s, rocket pod munitions (70mm Hydra), laser guided and if capable, GPS-aided munitions
 - ii. CCIP employment of a .50 caliber minimum forward firing aerial gunnery capability
 - iii. Employment of a minimum of two 500 lb class weapons while configured with a forward firing gun and electro-optical (EO)/infrared (IR) sensor.
- b. Armed Reconnaissance. To allow for targeting and reconnaissance from both crew positions the EO/IR sensor should be integrated with the aircraft avionics, displays and heads up display (HUD). The aircraft must be capable of:
 - i. EO/IR Full Motion Video (FMV) imaging
 - ii. Laser designation using North Atlantic Treaty Organization (NATO) Standard 1.06 micron laser designator
 - iii. Night vision goggle (NVG) compatible IR marking.
 - iv. Laser spot tracking
 - v. EO/IR image downlink to distribute FMV line-of-sight in flight to Remotely Operated Video Enhanced Receiver (ROVER) or One System Remote Video Terminal (OSRVT) receivers.
- c. Mission Performance. The aircraft must be able to take off using a maximum runway length of 6,000 ft, clear a 50-foot obstacle, and fly a combat profile using the Reconnaissance 1 (REC1) profile in Annex 3 for sea-level standard day conditions.
- d. Aircraft Availability. Aircraft must support an operations tempo requiring 900 flight hours per platform, per year, for ten years. The aircraft availability rate must be at least ninety percent (90%) Mission Capable (MC) for completion of day and night missions under Visual Meteorological Conditions (VMC). Platforms must be capable of sustaining an eighty percent (80%) Fully Mission Capable (FMC) rate for the completion of missions under Instrument Meteorological Conditions (IMC).
- e. Tactical Communications. Aircraft must be equipped with two Joint, secure tactical UHF/VHF voice radios. The UHF radio must be capable of using HAVE QUICK II. If cryptological hardware is not installed for the experiment, then secure communications capability will be evaluated on paper. Beyond Line of Sight (BLOS) voice communications and a tactical datalink (Joint Tactical Information Distribution (JTIDS) or Situational Awareness Data Link (SADL)) will be required on production aircraft; if not equipped for the experiment, this capability will be evaluated on paper.
- f. Range and Endurance. Aircraft must be capable of 2.5 hours mission endurance with appropriate VFR fuel reserves, full guns, and two weapons stations loaded with munitions. External fuel tanks are permissible. Ferry range with external fuel must exceed 800nm.

- g. Aircraft must have onboard EO/IR sensors that provide the crew with ability to detect, identify, track, and target stationary or moving surface targets under day or night conditions in clear weather. Aircraft must be suitable for NVG or equivalent night vision use by aircrew. Aircraft should be able to employ battlefield illumination devices (parachute flares). If SUU-25 is not appropriate for flight this capability will be evaluated on paper.
- h. Survivability. Aircraft will be evaluated for IR and visual signature during the experiment. Aircraft systems must provide awareness of attack sufficient to employ countermeasures effective against IR-guided and RF proximity-fuzed weapons (chaff & flares). Missile warning will not be evaluated in the experiment and must be evaluated on paper. Engine and cockpit floor must be capable of being protected by armor capable of defeating a 7.62x39 BP round (GRAU designation 7N23) at 100 meters range; armor need not be installed for the experiment. Aircraft must be capable of having a radar warning system installed but one need not be installed for the experiment.
- i. Supportability. Aircraft must have an average fuel flow of approximately 1500 lb/hr or less, clean.

2. System Attributes (SA)

- a. Cockpit Configuration. The configuration of each cockpit must allow for full control of the aircraft, weapons employment, weapons jettison, and weapons override from either seat, permitting single pilot instrument flight rules and visual flight rules operations by either aircrew IAW Title 14 Code Federal Regulation (CFR) Part 91. The aircraft will have or be capable of having a control system in the rear seat that allows sensor, expendables release, laser and radio control without having hands on the flight controls. The aircraft must have dual tandem zero airspeed and zero altitude ejection capability, accommodating pilots 64 inches – 77 inches tall and sitting heights of 34 inches – 40 inches. All aircraft flight and fuel controls, and critical/essential circuit breakers must be accessible from front cockpit, with seat belts/shoulder harnesses fastened. All aircraft controls and instruments within each cockpit must be visible and accessible from the seat, with seat belts/shoulder harnesses fastened.
- b. Navigation. The equipment must permit GPS and VOR navigation and flying localizer, VOR/DME and Category I ILS approaches in accordance with Title 14 CFR Part 91. The equipment should permit flying non-directional beacon (NDB) and azimuth direction finding (ADF) approaches, integrated GPS approach profiles, and be equipped with a database which can be populated with approach descriptions, digital maps, and digital terrain elevation data. Common multi-function display (MFD) cockpit configuration for all aircraft to include Wide Area Augmentation System (WAAS) and Vertical Navigation-certified Global Positioning System (GPS) navigation capability to allow day/night, all-weather instrument flight, especially into airfields that do not possess navigational aids. The aircraft must also have the ability to be FAA ADS-B compliant.
- c. Communications. The aircraft must have Mode C/S transponder or Mode C/3 transponder and have a crew intercom and dual radios to communicate simultaneously with Air Traffic Control (ATC) facilities and operational agencies line of sight (LOS) IAW Title 14 CFR Part 91. Aircraft must have or be capable of having an IFF transponder covering Mode I, II, IV and V. A control head must be

provided to allow the crew to transmit/receive simultaneously on four (4) radios. This SA overlaps with the Tactical communications AAI at 1e.

- d. Environmental. The aircraft must be equipped with an air conditioning and heating system capable of cooling/heating the aircraft interior to 55 – 85 degrees F when outside temperatures range from – 30 degrees F to 122 degrees F to include solar gain. The environmental control system must be able to cool avionics to below 131 degrees F within 30 minutes of avionics startup, and must be able to indefinitely maintain the temperature of the avionics at 131 degrees F or lower. The cooling system must have sufficient dust and sand filters to be capable of conducting desert environment operations.
- e. Defensive Measures. The aircraft must be capable of employing manually-activated and automatic IR and RF countermeasures (flares & chaff).
- f. Materiel Reliability. A 95% probability of completing a mission profile free from a mission critical failure in flight as outlined in Annex 3, paragraph D2 is required.
- g. Propulsion. The aircraft must have a propulsion system that will operate on JP-8 or Jet-A fuel and accommodate all takeoff, flight and landing operations with standard fuel and weapons loads as described in Annex 3. The aircraft must be capable of being started with an internal battery. In addition the aircraft must be able to start using an external power source including another aircraft of the same model.

3. Additional Attributes

- a. Light Attack. Stores Loading and Carriage. The aircraft must be capable of carrying the standard conventional loads (SCLs) listed in Annex 3 on NATO/US compatible hard points IAW MIL-STD-8591 Design Criteria Airborne Stores Suspension Equipment and Aircraft Store Interface.
- b. Maneuverability. The aircraft, in a clean configuration with sensor ball, must be capable of performing the following maneuvers: aileron roll, cloverleaf, lazy eight, loop, barrel roll, chandelle, Cuban eight, Immelmann, and split S.
- c. Operating Ceiling. The aircraft must be able to operate up to 25,000' MSL (FL250).
- d. Pressurization and Oxygen. The aircraft must provide pressurization for sustained flight up to and including FL250. The aircraft must provide a self-generating oxygen system to support flight up to FL250.
- e. Unimproved Surface Capability. The aircraft must be capable of taxi, take off, and land with a configuration as described in the mission profile in Annex 3, paragraph D1.2. on unimproved surfaces rated at a California Bearing Ratio-5 (CBR-5). Aircraft must be able to turn with no ground support other than fuel.
- f. HUD. The aircraft must have a HUD in the front and a HUD repeater with symbology and camera picture in the rear cockpit. HUD data must include aircraft flight parameters, position, navigation, timing, and weapons employment information.
- g. Mission Reconstruction. The aircraft must be capable of allowing time-synchronized digital recording and replay of cockpit audio, HUD, and MFD data from training missions for at least two hours. All recorded data must be available for playback on a laptop computer-based tool during debriefing.
- h. Mission Planning Tools. Aircraft mission planning must use a computer-based mission-planning tool and be easily transferred to each aircraft by a removable storage medium.

- i. Night Operations. The aircraft must be capable and have the necessary lighting to permit night formation flying. NVG compatible position, anti-collision/strobe, landing, taxi and interior lights are required. Cockpit instrumentation must be NVG compatible. Variable intensity standard NVG compatible interior lighting is desired.
- j. Operations in Icing Conditions. Aircraft must be capable of transiting light icing conditions for 15 minutes.
- k. Certification. Aircraft must be certified or capable of gaining certification for day/night visual flight rules/instrument flight rules (VFR/IFR) operations. Aircraft must be certified or capable of gaining certification to meet acquisition requirements and allow for U.S. Military operation.