

## Aircraft System

- Description of aircraft system.



Figure 1: Bat 3 UAV

The MLB Bat is a small, unmanned aerial vehicle (UAV) that has mission capabilities typically found only in larger UAVs. The Bat is a complete UAV system that can operate autonomously, deliver high quality video imagery, and fits into two suitcase-sized containers. The aircraft operates autonomously, has a 5-hour duration, and telemetry range of up to 10 miles.

Because of its small size and lightweight, the Bat is launched using a car-top, bungee-powered catapult and lands autonomously on wheels. A small clearing is adequate to operate the Bat. A 2.0 cubic inch gasoline or JP-8 fueled engine powers the aircraft and its muffler reduces the noise level to nearly inaudible at a distance of 1000 feet. The engine can operate from several fuel types (gasoline, Jet-A, pump diesel, JP-8) without modification in the field. Typical altitude for operation is 200 to 2500 feet above the local terrain, with a cruising speed of 35 kts. The Bat can easily operate in limited visibility conditions without danger to persons on the ground or possibility of detection. Our aircraft have flown under 200 foot cloud ceilings and in gusty winds exceeding 30 mph.

A pusher engine configuration is used to permit unobstructed installation of sensors in the nose and the Bat has uses gimbal turret camera system that is automatically aimed at locations specified by the operator. The turret carries both EO and IR cameras and the camera choice is specified by the operator through the MLB ground station. The aircraft and its systems are modular in design for simple maintenance and replacement of damaged components. The airframe is constructed of Kevlar, carbon fiber, and aluminum. The Bat has a 72 inch wingspan and a ready-to-fly weight of 23 pounds.