

## Launch/Recovery

Controlled by an automated takeoff and landing system and/or an external pilot for rolling takeoff and uses a tail hook for rolling arrested landings, both within an area of 50 feet by 1750 feet. The UA has standard aircraft red and green position lights, white anti-collision strobe light arrangement, a remotely programmable Mode 3A/C and Mode 4 transponder, and a GPS navigation system. Standard mission beacon codes will be coordinated through Robert Gray Air traffic Control Tower. Navigation can be autonomous or through direct control by the UA operator/pilot. Autonomous navigation is for executing preprogrammed missions via GPS waypoints and certain emergency procedures. Recovery and landing can be performed autonomously using the Automated Takeoff and Landing System (ATLS), a process similar to an Instrument Landing System (ILS) used by manned aircraft, or by the use of external pilot. A UA pilot/operator located in the Ground Control Station (GCS) controls the UA continually monitoring system status through all phases of operations, and maneuvers the UA as desired during mission operations. The external pilot controls the UA during takeoff and landing operations. Downlink data includes a display of health and status parameters such as altitude, magnetic heading, indicated speed, GPS position, barometric altitude, rate of climb/descent, engine instrumentation, warnings and cautions. UA position is displayed on a high-resolution digital map within the GCS. The primary and backup links have a line of sight operational range. Both links incorporate error detection to ensure that erroneous interference is not processed by the avionics. Two separate up-link frequency bands and directional antenna are incorporated to minimize communication link issues due to interference.