

INTELLIGENCE, SURVEILLANCE, RECONNAISSANCE DOMINANCE INEXPENSIVE LONG ENDURANCE UNMANNED AIR SYSTEM (UAS)

Unmanned Long-endurance Tactical Reconnaissance Aircraft (ULTRA)

WHAT IS ULTRA?

The Unmanned Long-endurance Tactical Reconnaissance Aircraft (ULTRA) is an aircraft conceived by the Air Force Research Laboratory (AFRL) Center for Rapid Innovation (CRI) and developed in conjunction with DZYNE Technologies Incorporated (DZYNE). ULTRA provides combatant commanders with full global operational access in an inexpensive, GPS hardened, ultra-long endurance Intelligence, Surveillance and Reconnaissance (ISR) platform. Ultra has an endurance capability that exceeds 80 hours while carrying over 400 lb. of payload. The ULTRA system is truly unique in its ability to conquer the tyranny of distance that inhibit operational use of current unmanned platforms at excessive ranges required in areas of operations such as the Pacific.

ULTRA is designed to be an ISR truck capable of carrying a variety of electro-optical/infrared (EO/IR), radiofrequency (RF), other low-cost intelligence collection payloads, and sensors to provide the user with a reconfigurable missionized platform. Exceptionally long endurance allows these ISR sensors to provide unblinking coverage of areas of interest with fewer aircraft. Furthermore, ULTRA is an economical option when multiple aircraft systems need to be purchased to cover larger areas of interest.



Picture of ULTRA on runway preparing for takeoff. Current upgrades will push the endurance to potentially greater than 80hrs depending on payload.

WHY IS IT IMPORTANT?

- Tyranny of distance in relevant operational areas place unique requirements on ISR aircraft to be effective.
- Additionally, some areas have limited basing options that require manned and unmanned aircraft to fly long distances to operation areas which limits on-station time.
- ULTRA will enable the USAF to not only economically procure aircraft systems in large quantities but will also provide an aircraft that is effective at these excessive ranges.

HOW DOES IT WORK?

ULTRA utilizes a novel approach to achieve long endurance and acquisition cost objectives by repurposing a previously manned commercial sport glider and converting it to a military hardened unmanned air vehicle. Commercial-off-the-shelf (COTS) UAS technology, existing manufacturing and supply channels, and limited custom avionics are utilized to ensure acquisition and sustainment costs remain low. Integration of lower cost EO/IR and RF sensors is made possible due to lower operating altitudes which don't require large optics, or high-power RF to maintain effectiveness.

ULTRA relies on an operator friendly command and control system that allows for "Point and Click" operations. Full global operations are possible through satellite-based command and control links that also provide the high-rate ISR data feed to the operators in real time.