

XQ-58A VALKYRIE

KEY BENEFITS

- The XQ-58A Valkyrie is a high speed, long range, low cost unmanned platform designed to offer maximum utility at minimum cost.
- This aircraft falls under the AFRL Low Cost Attributable Aircraft Technology portfolio.
- The XQ-58A was successfully designed, built, and demonstrated after a period of only two and a half years from contract award to first flight.

WHY IS IT IMPORTANT?

Designing, building, and operating a traditional, high-end air vehicle for certain missions is often impractical in terms of cost and human risk. The cost of these exquisite systems is on track to rise exponentially in the coming years.

Unmanned vehicles are increasingly used to perform missions previously accomplished by piloted aircraft. However, some of the Air Force's most commonly used unmanned aircraft are highly sophisticated and costly platforms and are limited to permissive environments. Additionally, they require frequent inspections and maintenance to ensure mission readiness.

The XQ-58A addresses the issues of cost, maintenance, and attrition tolerance. This low cost, low maintenance, more expendable platform is capable of achieving the same vital missions as existing aircraft, both manned and unmanned. The intent of this effort is to demonstrate the ability to field an attributable aircraft quickly and inexpensively by developing and using better design tools and maturing and leveraging commercial manufacturing processes to reduce build time and cost.

The employment of a class of attributable aircraft like the XQ-58A provides the warfighter the opportunity to project air power with mass, complexity, and unpredictability. The vision is that these aircraft will be used in a fractionated networked battlespace, forcing a cost-imposing effect on future adversaries.

WHAT IS IT?

The XQ-58A Valkyrie is a low cost, high performance unmanned air vehicle developed through an Air Force Research Laboratory partnership with Kratos Defense & Security Solutions, Inc.

The joint effort was executed within AFRL's Low Cost Attributable Aircraft Technology (LCAAT) portfolio. The goal of LCAAT is to break the escalating cost trajectory of tactically-relevant aircraft. This partnership included Kratos' design and production of the aircraft, while the AFRL Aerospace Systems Directorate provided critical turbine inlet integration, structural testing, and evaluation of the XQ-58's electrical and control subsystems.

HOW DOES IT WORK?

The XQ-58A was developed through low-cost procurement and designed to be significantly less expensive to operate than traditional piloted or unpiloted vehicles. It is the first example of a class of unmanned air vehicles developed through this cost- and timesaving process.

This low-maintenance, reusable vehicle is an example of an "attributable" aircraft designed to be used for several missions, but built at a cost that permits it to be a combat loss. This long range aircraft is designed for high speeds and agile maneuverability, enabling it to perform a variety of missions. It is runway-independent, offering maximum operational flexibility to the warfighter.



XQ-58A Valkyrie pictured during second test flight on June 11, 2019.
Photo Credit: 2nd Lt Randolph Abaya, 586 Flight Test Squadron.

FLIGHT TESTS

After a rapid and agile design and build of two and a half years from contract award, the XQ-58 completed its first flight on March 5, 2019. On January 23, 2020, the aircraft completed its 4th flight meeting all of the flight test objectives.

To reduce risk to the development and maturation of artificial intelligence capabilities, AFRL led a successful three-hour sortie, July 25, 2023, demonstrating the first-ever flight of AFRL-developed, machine-learning trained, artificial intelligence algorithms on an XQ-58A Valkyrie. Future flight tests will continue to measure system performance and functionality.



FUTURE PROGRAM OBJECTIVES

Future flights will demonstrate XQ-58 capability as a communications gateway between 5th gen aircraft and as low cost forward layered sensing. The capability demonstrations are being funded as part of Advanced Battle Management Systems efforts.



ABOUT AFRL

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