



X-31A VECTOR

Vectoring ESTOL Control Tailless Operation Research

Demonstrating extremely short-takeoff-and-landing (ESTOL) capabilities

Boeing Phantom Works

The Catalyst For Innovation

X-31A VECTOR

Vectoring ESTOL Control Tailless Operation Research

Originally flown under the EFM (Enhanced Fighter Maneuverability) program during the 1990s, the X-31A VECTOR has resumed test flights at Patuxent River Naval Air Station. VECTOR (for Vectoring ESTOL Control Tailless Operation Research) is a joint venture between Boeing, the U.S. Navy, the German Ministry of Defense and the European Aeronautic Defense and Space (EADS) corporation. Boeing is the prime U.S. contractor and systems integrator for the program, and at the inception of the program brought the X-31A back to flight status at its Palmdale, Calif. facility.

The primary focus of the VECTOR program will be to demonstrate extremely short-takeoff-and-landing (ESTOL) capabilities. The new ESTOL system will allow the thrust vectoring X-31 to safely approach a runway at a speed of 100 knots (versus the typical 165 knots), and at angles-of-attack of up to 40 degrees (versus the nominal 12 degrees). The test pilot will monitor the performance of the system using both existing and ESTOL-unique cockpit displays, including a view of the approach through a belly-mounted video camera.

For aircraft carriers operations, ESTOL capabilities will reduce wear-and-tear on aircraft and negate need for a fully navalized aircraft structure. This capability will also reduce the need for minimum wind-over-deck landing operations, and the dumping of unused ordnance and fuel before landing. All this will greatly

X-31A will Demonstrate that Thrust Vectoring can be used to Achieve Extremely Short Takeoffs and Landings.

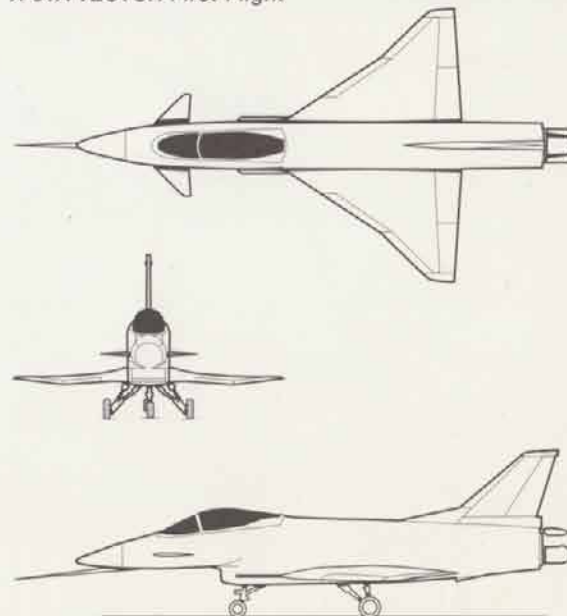
increase operational flexibility, life cycle savings and safety for future aircraft.

The two-year flight test program is being conducted in three phases. Phase I, now completed, successfully performed functional checkout, pilot familiarization and thrust vectoring calibration. Phase II will evaluate ESTOL avionics, navigation performance, autopilot and display functions, and the first AADS (Advanced Air Data System). Phase III will focus on ESTOL demonstrations and testing the second (miniaturized) AADS.

The inspiration for the VECTOR program resulted from the X-31's spectacular performance at the 1995 Paris Air Show, when the aircraft flew controlled high angle of attack maneuvers at 500 ft. altitude at speeds of 55 to 75 knots. Once all three phases of the current flight test program are completed in 2003, possible flight tests in the future will examine reduced vertical tail configurations and tailless operations.



X-31A VECTOR First Flight



Jack's

Aerospace History Files



Uwe W. Jack

This is a document from
Uwe W. Jack's archive.

These documents are intended to
illustrate aspects of aerospace history.

You are free to share it with friends.
commercial use is prohibited.

Uwe W. Jack occasionally puts
new documents on his website.

Please visit:

www.aerospace-jack.com

Junkers Ju 287

The most advanced
Jet-Bomber
of the Luftwaffe

This is the story of an aircraft that might
have changed the air-war in 1945/46.
Lots of photos, drawings, information,
data and more than 6000 words give
a detailed insight into the development
of this unique piece of aviation.

Available as eBook on

Amazon

and

smashwords

