

JSF X-35B Converts To STOVL, Goes Supersonic In The Same Flight

PRNewswire

EDWARDS AIR FORCE BASE, Calif.

The Lockheed Martin Joint Strike Fighter X-35B engaged its short-takeoff/vertical landing (STOVL) system and made a supersonic dash in the same flight on Monday, July 9, near Edwards Air Force Base.

Pilot Simon Hargreaves took off, climbed to 9,000 feet and successfully engaged the shaft-driven lift fan propulsion system at 180 knots. He then accelerated to an indicated Mach 1.08, marking the first time a JSF demonstrator has achieved a STOVL mode conversion and sustained supersonic flight in a single sortie.

The test marked the X-35B's first in-flight conversion to STOVL mode. Late last month, the aircraft completed 17 vertical takeoffs, hovers and vertical landings at the Lockheed Martin plant in Palmdale, Calif. Hargreaves flew the aircraft to Edwards on July 3 to begin the in-flight STOVL and conventional-flight testing series for the X-35B.

"By performing these missions that combine both STOVL and high-speed up-and-away objectives, we are demonstrating that the system we have designed, built and certified for flight can easily execute both flight modes in a single sortie," said Tom Burbage, executive vice president and general manager of the Lockheed Martin JSF program. "Our team will continue to expand the in-flight STOVL envelope in an aircraft that is essentially identical to the JSF we intend to produce for the armed forces of the United States and United Kingdom. The X-35B is in the same configuration it was when we performed our hover tests, and its configuration will remain unchanged throughout the flight-test program."

The X-35B features a unique propulsion system in which a drive shaft from the Pratt & Whitney JSF119-611 engine turns a counterrotating lift fan that produces cool-air lifting force during STOVL operations. The Rolls-Royce fan, actuated by a clutch that can be engaged at any power setting, works in concert with an articulating rear duct and under-wing lateral-control nozzles to lift the aircraft with nearly 40,000 pounds of vertical force. Because the fan amplifies the engine's power, the engine is able to run cooler and with less strain, increasing reliability and extending service life. The lift fan provides the propulsion system with about 10,000 pounds more thrust than the engine alone could generate.

All of the X-35B vertical takeoffs, hovers and landings were accomplished at 2,500 feet elevation, at temperatures up to 94 F.

The Lockheed Martin team approach to the STOVL flight-test program is based on fielding and flying a demonstrator that solves the marginal thrust levels associated with direct-lift STOVL aircraft, so that both technical risk and cost are reduced before the JSF's production phase.

Advanced manufacturing methods already demonstrated by the Lockheed Martin JSF team will bring significant reductions in manufacturing time and costs over legacy fighter aircraft.

Lockheed Martin, in partnership with Northrop Grumman and BAE SYSTEMS, is in competition to build the JSF for the United States and United Kingdom. Government selection of a single contractor for the Engineering and Manufacturing Development phase is set for fall 2001.

For photos and information on the JSF, visit: <http://www.lmaeronautics.com/>.

For government information on the Joint Strike Fighter program, visit <http://www.jast.mil/>.

For information on Lockheed Martin Corporation, visit: <http://www.lockheedmartin.com/>.

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