Royal Air Force Pilot Goes Vertical In Lockheed Martin's JSF X-35B; 'It Was Awesome'

Squadron Leader Justin Paines has become the first Royal Air Force pilot to evaluate the vertical takeoff, hover and vertical landing performance of the supersonic Lockheed Martin Joint Strike Fighter X-35B.

Paines, a Harrier pilot who was selected to test the X-35 demonstrator aircraft for the United Kingdom, roared into the air with a series of three hovers for a total of eight and a half minutes at the Lockheed Martin plant in Palmdale, Calif., on June 30.

"It was awesome. The aircraft performed flawlessly," Paines said. "The system produces an incredible amount of thrust, 15 or 20 tons of thrust, even here in the high desert in summer, and yet we can control that thrust with the precision required to maneuver the aircraft in the hover.

"Apart from having to adhere to the upcoming flight-test phase, there was nothing that would have stopped me accelerating away to supersonic speed with the same aircraft."

Of the three pilots who have flown the short-takeoff/vertical landing (STOVL) aircraft, two are citizens of the United Kingdom: Paines and Chief Test Pilot Simon Hargreaves of BAE SYSTEMS. The third, Maj. Art Tomassetti, is a U.S. Marine Corps Harrier pilot.

U.K.-based BAE SYSTEMS, along with U.S. defense contractor Northrop Grumman, is a major partner on the Lockheed Martin JSF program.

The X-35B is designed to fulfill performance requirements for the Royal Air Force, Royal Navy and U.S. Marines. It made its first vertical takeoff and vertical landing on June 23, becoming the first JSF demonstrator to achieve those milestones. Since then it has hovered numerous times at up to 50 feet above the ground, and will begin transitions from conventional flight to hover in the coming weeks.

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.

"The incredible operational capability foreseen for JSF, coupled with JSF's low cost and with the flexibility of STOVL operations, will be an unbeatable military asset," Paines said. "JSF is the fighter program to top all others. I am proud of the technical contribution the U.K. has made to the program and mighty relieved that the U.K. is a part of it!"

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 reduce manufacturing time by 66 percent and manufacturing costs by more than 50 percent 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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