JSF X-35B Achieves Vertical Takeoff To Sustained Altitude

The supersonic Lockheed Martin Joint Strike Fighter X-35B launched vertically, held its position and landed vertically today. The event was a first for a JSF demonstrator and a critical validation of the revolutionary shaft-driven lift fan propulsion system.

"This lift fan system is a unique, next-generation leap in technology -- the same sort of aviation advance we saw when jets replaced piston engines," said Harry Blot, a former Harrier test pilot who now serves as vice president and deputy program manager for the Lockheed Martin JSF. "We decided on this approach because the fan multiplies engine power and provides tremendous lifting force with less engine strain. It also has huge payoffs in terms of freedom in designing the next-generation Joint Strike Fighter."

At 6:30 a.m. PDT at the Lockheed Martin plant in Palmdale, pilot Simon Hargreaves engaged the lift-fan propulsion system, and the plane rose straight up to a sustained position at an altitude of about 25 feet above the ground.

"This was a stunning success. The lifting power is incredible and the handling is extremely precise," said Hargreaves of BAE SYSTEMS, a veteran Harrier pilot. "The flight occurred with minimal pilot inputs -- I was essentially a passenger. This speaks volumes about the quality of the aircraft and the propulsion system."

Hargreaves held the 35,000-pound X-35B in a stabilized position for 35 seconds, checking to ensure the flight controls responded properly before returning the plane gently to the ground.

"This is absolutely breakthrough technology," said Tom Burbage, executive vice president and general manager of the Lockheed Martin JSF program. "Our team has worked tirelessly to make this system safe and reliable and to bring STOVL performance to an extraordinary new level. We knew it would work. Now we're getting to prove it."

Subsequent flights will include conversions to and from conventional and STOVL modes, transitions from wing-borne to jet-borne flight, short takeoffs, and vertical landings. Flight-test operations will move first to Edwards Air Force Base, Calif., then to Naval Air Station Patuxent River, Md., where the aircraft's sea-level capabilities will be demonstrated to the sea services. The aircraft completed its wing-borne flight requirements last November.

The X-35B, designed to meet U.S. Marine Corps and Royal Navy/Royal Air Force requirements, 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 front-mounted fan works in concert with an articulating rear duct and under-wing lateral-control nozzles to generate nearly 40,000 pounds of lifting power. Rolls-Royce produces the fan.

"We are proud to have played a key role in Lockheed Martin's innovative STOVL solution," said Charles Hughes, Rolls-Royce vice president of JSF. "The X-35B has offered Rolls-Royce an exciting opportunity to team with aerospace industry leaders to work on a tremendous challenge. Our team has been excited by the challenge, and has responded enthusiastically to tackling the complex technical issues and integration."

Walt Sirmans, Pratt & Whitney's program manager for the Lockheed Martin JSF119 engine program, said, "The extraordinary performance and rock-solid controllability demonstrated today confirms this concept and our readiness for the next phase."

The Lockheed Martin team approach to the flight-test program is based on fielding and flying a demonstrator that is virtually identical to the production model, so 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.

"What makes today's feat even more remarkable is the fact that it was achieved at 2,500 feet elevation in the high desert, where engine performance is typically lower compared to sea-level operations," Blot said. "The airplane held its above-ground position at significantly less than full throttle."

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, visithttp://www.jast.mil/

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

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