Lockheed Martin JSF X-35B Completes Flight Testing Following History-Making Short Takeoff/Supersonic Dash/Vertical Landing

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The Lockheed Martin Joint Strike Fighter X-35B completed one of history's most successful flight test programs on July 30 after achieving what no aircraft has ever done: a short takeoff, a level supersonic dash and a vertical landing in a single flight.

Test pilots Maj. Art Tomassetti of the U.S. Marine Corps and Simon Hargreaves of BAE SYSTEMS each accomplished the unprecedented feat, which will be required of production JSFs for the Marines, Royal Navy and Royal Air Force. Tomassetti flew "Mission X," as the operation is known to JSF team members, on July 20. Hargreaves followed up with a Mission X flight on July 26.

The X-35B has now completed all Concept Development Program objectives, and has generated all required contract flight-test data. Lockheed Martin officials say the aircraft's performance surpassed expectations that were already high.

"This completes the third and final phase of a concept demonstration program that has redefined the standard for flight test," said Tom Burbage, executive vice president and general manager of the Lockheed Martin JSF program. "The Lockheed Martin JSF team made a promise and kept it, including fielding a demonstrator aircraft that is representative of the one we have planned for production. That means fewer expensive development hurdles to clear and a more seamless transition into the program's next phase, Engineering and Manufacturing Development.

"The astonishing success of this flight-test program can be traced directly to the hard-working and talented international team Lockheed Martin assembled to develop a superior and affordable next-generation strike fighter for the U.S. and her allies. With the X-35B, we also proved that our revolutionary short-takeoff/vertical landing (STOVL) propulsion system, with the shaft-driven lift fan as its centerpiece, is reliable, durable and offers profound performance advantages over legacy STOVL systems."

During its flight-test program, the X-35B completed 27 vertical landings, 14 short takeoffs, 18 vertical takeoffs, was flown by four pilots from the U.S. and the U.K., broke the sound barrier on five separate occasions and completed five aerial refuelings.

"The best reward for this team's hard work over the years is a great success story like this. It was a privilege to be a small part of this history-making event," said Maj. Tomassetti, after becoming the first pilot to achieve a short takeoff, supersonic dash and vertical landing in a single flight.

His mission included an automatic short takeoff at 80 knots, an in-flight conversion from the STOVL propulsion system to the conventional system, a climb to 25,000 feet and acceleration to Mach 1.05. He then conducted a series of flying-qualities tests, converted back to STOVL mode, decelerated to a hover at 150 feet above ground level and landed vertically.

Hargreaves repeated the Mission X performance on July 26, adding a steep afterburner climb, 360-degree rolls at 20 degrees angle of attack and an aerial refueling. He achieved Mach 1.06 at 25,000 feet. In a subsequent flight, he demonstrated a 60-knot automatic short takeoff (approximately 500 feet), then transitioned into a sustained hover, executed a 360-degree pirouette and landed vertically with an aircraft weight of more than 34,000 pounds -- double the hover weight of legacy STOVL aircraft.

"The ability to convert from STOVL to CTOL at full power ensures that no performance is sacrificed during the conversion and demonstrates the ruggedness and simplicity of the conversion process," said Hargreaves, also a Harrier pilot.

In a later flight on July 26, X-35 Chief Test Pilot Tom Morgenfeld expanded the X-35B's flight envelope with a full afterburner takeoff and accelerations to Mach 1.2 at 25,000 and 30,000 feet.

The Joint Strike Fighter Concept Demonstration program was designed to produce a new breed of "X" plane -- a research vehicle exploring technologies directly applicable to an operational combat aircraft. The X-35B made that goal a reality with the highly successful "X" missions, demonstrating that supersonic STOVL is within reach now, at low risk, using the Lockheed Martin team's innovative shaft-driven lift fan technology.

The X-35B will fly to the Lockheed Martin plant in Palmdale, Calif., following post-flight maintenance and inspections.

X-35B Flight-Test Milestones
-- July 30 -- The X-35B completes its flight test program with all goals met.
-- July 26 -- The X-35B performs an automatic short takeoff at 60 knots, using approximately 500 feet of runway. A later flight by X-35 Chief Test Pilot Tom Morgenfeld pushes the aircraft to Mach 1.2.
-- July 20 -- The X-35B, flown by USMC Maj. Art Tomassetti, performs the world's first short takeoff, level supersonic dash and vertical landing in a single flight.
-- July 19 -- Squadron leader Justin Paines becomes the first Royal Air Force pilot to transition from wingborne flight to a vertical landing in the X-35B.
-- July 16 -- X-35B Chief Test Pilot Simon Hargreaves guides the aircraft to its first vertical landing from wingborne flight.
-- July 9 -- The X-35B completes its first airborne transition from STOVL propulsion mode to conventional mode, completing a supersonic mission on the same flight.
-- July 3 -- The X-35B flies to nearby Edwards Air Force Base, from Lockheed Martin-Palmdale to continue its STOVL flight-envelope expansion.
-- June 30 -- RAF Squadron Leader Justin Paines becomes the first U.K. service pilot to take off vertically, hover and land vertically in the X-35B. His hovers total more than 8 minutes.
-- June 29 -- USMC Maj. Art Tomassetti becomes the first Marine Corps pilot to take off vertically, hover and land vertically in the X-35B.
-- June 24 -- The X-35B achieves its first sustained hover.
-- June 23 -- The X-35B becomes the first JSF demonstrator to perform a vertical takeoff and vertical landing.

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.

http://www.lmaeronautics.com/news/press/jsf/jsfpr010801.html

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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