

# Lockheed Martin JSF X-35B Makes History After Vertical Landing From Wingborne Flight, Short Takeoff

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EDWARDS AIR FORCE BASE, Calif.

The supersonic Lockheed Martin Joint Strike Fighter X-35B made a successful short takeoff, transitioned back from wingborne to jetborne flight and made a picture-perfect vertical landing at Edwards Air Force Base on July 16.

The soft touchdown followed a series of weekend flights in which the X-35B achieved successively slower speeds with its short takeoff/vertical landing (STOVL) system activated. The aircraft also executed several successful short takeoffs and "slow" landings.

"Again, the X-35B performed flawlessly, and the vertical landing was extraordinarily smooth and easy," said Simon Hargreaves of BAE SYSTEMS, chief test pilot for the X-35B. "We were in familiar territory, since we had already demonstrated the airplane's solid and stable hovering ability numerous times last month. The aircraft's shaft-driven lift fan propulsion system produces enormous amounts of power, even in the California desert with its high elevation and hot temperatures.

"We also found that our vertical propulsion system provides a tenfold decrease in the hot exhaust that an aircraft reingests, as compared to other vertical propulsion systems. All this gives you a real safety margin during vertical operations."

Late last month, the aircraft completed 17 vertical takeoffs, hovers and vertical landings at the Lockheed Martin plant in Palmdale, Calif. On July 9, it performed a STOVL conversion, a mid-air refueling and supersonic dash in the same flight.

"The X-35B has now successfully completed short takeoffs, transitions between wingborne and jet borne flight, hovers, vertical landings, and has flown supersonic, all profound achievements that literally define the baseline flight requirements of the Joint Strike Fighter," said Tom Burbage, executive vice president and general manager of the Lockheed Martin JSF program. "The aircraft performed all of these missions without any modifications -- that's truly a testament to the talent and hard work of the Lockheed Martin X-35 team."

The X-35B features a unique propulsion system in which a drive shaft from the Pratt & Whitney JSF119-611 engine (common to all Lockheed Martin JSF variants) 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 underwing 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 15,000 pounds more thrust than the engine alone could generate.

"Today's vertical landing of the X-35B marks yet another key milestone in the X-35 flight test program," said Lt. Col. James Geurts, X-35 program manager for the government's Joint Strike Fighter Program Office. "I want to congratulate Lockheed Martin, their program partners Northrop Grumman and BAE SYSTEMS, as well as Pratt and Whitney and Rolls Royce on this tremendous accomplishment.

"This flight culminates the work of thousands of people in industry and government and is an example of what industry, in partnership with the government, can accomplish for the joint warriors of tomorrow. The Joint Strike Fighter program is the linchpin for our future tactical aviation forces, and the vertical landing of the X-35B today is a tremendous step toward the fielding of these aircraft for our Air Force, Navy, Marines, Allied and Coalition war fighters.

Finally, Harry Blot, vice president and deputy program manager of the Lockheed Martin JSF, sees in today's flight the start of a new era.

"We've proven today that we've overcome the limitations of legacy vertical propulsion," said Blot, one of the first Marine test pilots for the legacy Harrier program and later the manager of that program. "As that era ends, we now can introduce a successful, revolutionary propulsion and combat system suited for the next 30 years of STOVL and conventional operations."

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/news/press/jsf/jsfpr010716.html>

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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