

# First Flight Of Cutting-Edge 'Electric' Aircraft Heralds Less Weight, Lower Cost For Lockheed Martin JSF

PRNewswire  
FORT WORTH, Texas

An F-16 equipped with a revolutionary "power by wire" flight-control subsystems package made its first flight on Oct. 24. The flight demonstrates a new generation of technologies destined to reduce takeoff weight, increase survivability and trim costs on the Lockheed Martin Joint Strike Fighter (JSF).

The J/IST (JSF Integrated Subsystems Technology) program is designed to reduce the risk of selected high-payoff technology candidates for the JSF program. The Advanced Fighter Technology Integration (AFTI) F-16 technology demonstration aircraft is being used to demonstrate one of the J/IST projects -- electric actuation, rather than the traditional hydraulic actuation, of flight control surfaces.

"Lockheed Martin and its partners are developing this technology for our production JSF," said Frank Cappuccio, vice president and program manager of the Lockheed Martin JSF. "Maturing the system now means we will only have to refine it in the program's follow-on Engineering and Manufacturing Development (EMD) phase."

Lockheed Martin embraced U.S. government studies that predicted electric flight-control actuators and integrated subsystems would reduce weight and cost while significantly enhancing survivability and supportability.

"We've reduced a technology risk early and improved the operational capability of our jet for future war-fighters," said Harry Blot, vice president and deputy program manager of the Lockheed Martin JSF. "The payoff is that we enter EMD with a more survivable strike fighter -- one with a 15-percent reduction in vulnerable area. It also makes our program more affordable."

The successful first flight, at Lockheed Martin Aeronautics Company in Fort Worth, lasted about 70 minutes. The aircraft achieved an altitude of 30,000 feet and a maximum speed of 350 knots. During the flight, test pilot Steve Barter checked flying qualities, basic systems and the new electric actuation of all control surfaces. Subsequent flights will expand the flight envelope.

"This is clearly the way aircraft technology is headed," Cappuccio said. "We're excited about our JSF cutting that path into the future. Government studies show our mature J/IST solution can mean up to a 5-percent reduction in aircraft procurement costs, 13-percent lower life-cycle costs compared with current fighters and nearly a 6-percent decrease in gross takeoff weight."

Frank Kirkland, J/IST team lead at Lockheed Martin, described the flight as "one of the most significant" fighter risk-reduction and subsystem developments since the 1970s introduction of F-16 "fly-by-wire" technology.

"It was a real team success," Kirkland said. "We depended on the state-of-the-art technical achievements of our partners, who are truly world-class."

The team includes Parker Aerospace, Hamilton Sundstrand, Honeywell, Lucas Aerospace, Eagle-Picher and BAE SYSTEMS. J/IST advances have been in development at the Air Force Research Laboratories since the early 1980s.

Lockheed Martin produces the world's most advanced and successful fighter aircraft, including the F-22, F-117 and F-16. The company, in partnership with Northrop Grumman and BAE SYSTEMS, is in competition to build the JSF for the United States and Great Britain. Government selection of a single contractor for the EMD phase is set for 2001.

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For information on Lockheed Martin Aeronautics Company, visit: <http://www.lmaeronautics.com/>.

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

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