

Specially Equipped F-16 Proves Revolutionary JSF Flight-Control And Power System At Supersonic Speeds

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An F-16 equipped with a revolutionary flight-control and power system broke the sound barrier on its third flight, successfully demonstrating that the all-new system, destined for the Lockheed Martin Joint Strike Fighter (JSF), performs faultlessly at supersonic speeds.

The new system, called J/IST (JSF Integrated Subsystems Technology), includes a power-on-demand electrical system and electric actuation of flight-control surfaces -- replacing the large, heavy and maintenance-prone hydraulic systems on current aircraft. Government studies show the combination of technologies will reduce takeoff weight, increase survivability and trim costs. Lockheed Martin has committed to incorporate J/IST on the production version of its JSF.

The supersonic flight originated at Lockheed Martin's Fort Worth plant on Nov. 9 and lasted about 40 minutes. The Advanced Fighter Technology Integration (AFTI) F-16 -- used to demonstrate the J/IST package -- achieved an altitude of 30,000 feet and a maximum speed of Mach 1.3. During the flight, Chief Test Pilot Steve Barter checked the aircraft's flying qualities at high "q" (aerodynamic pressure) with the new electric-actuation system. The aircraft successfully performed various flying-quality maneuvers at supersonic speeds, including 5-g turns; pitch, roll, and yaw doublets; and sideslips.

"Performance was transparent -- identical to that of production F-16s," said Barter, a veteran F-16 pilot. "The aircraft handled as predicted."

Subsequent flights will quantify the aircraft's handling qualities and gather actuator duty cycle and thermal data to support Lockheed Martin's JSF design refinements for the program's Engineering and Manufacturing Development Phase (EMD).

"Maturing the system and reducing risk now means J/IST will require only incremental refinements in the EMD phase," said Harry Blot, vice president and deputy program manager of the Lockheed Martin JSF. "The bottom line: We go into EMD with a validated, new-generation system that saves taxpayer dollars."

The Lockheed Martin J/IST team includes Parker Aerospace, Hamilton Sundstrand, Honeywell, TRW Aeronautical Systems (Lucas Aerospace), Eagle-Picher and BAE SYSTEMS. J/IST has been in development at the Air Force Research Laboratories since the early 1980s.

The J/IST supersonic flight is an important element in the success of the overall Lockheed Martin JSF flight-test program. The team has now completed 100 percent of flight-test objectives for the conventional takeoff and landing (CTOL) JSF X-35A demonstrator. Ongoing flight testing will focus on the team objectives of reducing technical risk and ensuring JSF affordability.

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 2001.

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