Lockheed Martin JSF Team Completes Durability Tests For STOVL Propulsion System; Testing Equivalent To 132 Missions

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The Lockheed Martin Joint Strike Fighter propulsion team has completed accelerated mission testing (AMT) for the X-35B demonstrator's short-takeoff/vertical landing propulsion system -- one of the final steps before full flight certification.

"With the completion of AMT we're moving swiftly toward STOVL flight," said Tom Burbage, executive vice president and general manager of the Lockheed Martin JSF program. "We've just demonstrated very clearly the benefits of the revolutionary shaft-driven lift fan propulsion system: a more benign ground environment and more lifting power with less engine strain and less ground surface erosion."

The AMT is a government-monitored durability evaluation in which the STOVL propulsion system hardware is subjected to twice the number of operating profiles it will encounter during flight testing. The speed with which the STOVL AMT was completed is unprecedented. All test objectives were met in less than half the time predicted.

"With AMT completion, we've truly shown that this STOVL propulsion system is capable, reliable and ready for flight," Burbage said.

A team consisting of Pratt & Whitney, Rolls-Royce and Lockheed Martin engineers and technicians conducted the trials on a test stand at Pratt & Whitney's West Palm Beach facility. The unique propulsion system features a Pratt & Whitney JSF119-611 engine connected via drive shaft and clutch to a Rolls-Royce two-stage counterrotating lift fan. A thrust-vectoring rear nozzle and lateral "roll posts" also are manufactured by Rolls-Royce. In STOVL mode, the system produces nearly 40,000 pounds of vertical lifting force, providing ample hover thrust margin for safe STOVL operations.

During AMT, the STOVL propulsion system was continually cycled, representing 132 flight test missions. The operations were identical to those expected during subsonic and supersonic flight testing, ground testing and STOVL operations. At all times, the test team imposed bleed-air and horsepower extractions representative of X-35 requirements. The STOVL propulsion system was subjected to more than double the operating time/events expected during the X-35B STOVL flight demonstration program in terms of total accumulated engine cycles (TAC), total STOVL lift system operating time, and total number of lift-fan dynamic clutch engagements.

The final statistics are: 249 TACs, 115.6 hours of STOVL system operation and 171 dynamic clutch engagements. (In a typical mission, the propulsion system would operate in STOVL mode for less than 10 minutes.)

Remaining tasks for STOVL propulsion system hardware flight certification are system tear-down and inspection, and final flight-clearance documentation. STOVL software flight-qualification testing is under way, with expected completion in early May. STOVL propulsion system flight certification is anticipated for late May. Last month, the JSF X-35B completed non-flight hover pit testing, achieving full operational thrust and a better-than- predicted ground environment (exhaust temperatures and velocities near the aircraft).

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.

For more information on the JSF and Lockheed Martin Aeronautics Company, visit: http://www.lmaeronautics.com/

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

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