Tests Verify Boeing X-32 Fuel System Fully Operational, Leak-Free

Testing completed last week by the Boeing Joint Strike Fighter One Team verified that the fuel system for the X-32A JSF concept demonstrator is safe, effective, leak-free and ready for flight testing.

The tests validated the ability of the fuel system to refuel and defuel the aircraft, to transfer fuel between tanks for center-of-gravity and thermal management, and to deliver fuel to the engine at all power settings. During the test, engineers calibrated the tanks, including the gauging system. Many of the tests were performed under the control of the onboard automatic vehicle management system, evidence that the aircraft is making steady progress toward flight testing.

"We are extremely pleased with the results," said Damian Monda, JSF Subsystems integrated product team manager for Boeing. "The fuel system works as designed."

One Team members Flight Refuelling Limited of Wimborne, England, and BFGoodrich of Vermont were actively involved in the definition and performance of the testing. Flight Refuelling Limited leads the team of suppliers who provide the fuel system.

The close correlation between performance predictions and test results validates the integrated design and analysis approach the Boeing JSF One Team will carry forward into the next phase of the program.

As members of the Boeing JSF One Team, employees in Seattle, St. Louis and Palmdale, and fuel-system suppliers use computer networks and three-dimensional design tools that have facilitated an unprecedented collaboration of talent.

"We are linking some of the best minds in aerospace for greater affordability and improved aircraft performance," Monda said.

The aircraft was tested to its full load of JP-5 fuel. A battery of 438 test steps, which took just over a week to complete, involved complete system tests at all required pitch attitudes. Although fuel leaks are common on newly designed airplanes, said Walt Cannon, X-32A Ground Operations lead, the X-32A did not leak.

The Boeing X-32 one-piece wing contains all the fuel tanks, a design that has helped assure leak-free performance. The wing was leak-tested before it was attached to the fuselage and a second time after the entire airplane had undergone a thorough series of structural tests in October. This highly modular approach simplifies assembly processes and reduces costs in all phases of the program, helping Boeing provide the best value for the customer.

The X-32A continues final systems installation and check out in anticipation of flight testing in spring 2000. The second Boeing JSF concept demonstrator aircraft, the X-32B, is in final assembly and system installation in Palmdale.

Together the two X-32 aircraft will meet the JSF program's three concept-demonstration objectives: 1) commonality across the variants, including design/build processes; 2) the Boeing direct-lift propulsion concept for short takeoff/vertical landing hover and transition; and 3) low-speed carrier approach flying qualities.

Boeing is competing to build the JSF under a four-year U.S. Air Force, Navy and Marine Corps concept demonstration phase contract, while also defining the characteristics of the "preferred weapon system concept" - the operational JSF. Boeing is the world's largest producer of fighter aircraft.

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