Structural Tests Validate Boeing JSF X-32A Design

Boeing has successfully completed structural proof testing of its Joint Strike Fighter X-32A concept demonstrator. The tests validated the aircraft's ability to withstand the rigors of flight testing, which begins next year.

The tests confirmed the integrity of the aircraft's structural design by simulating flight and landing conditions. A test fixture with more than 100 hydraulic actuators applied stresses to different parts of the airplane to simulate in-flight aerodynamic pressures and carrier landings. No structural problems of any kind were encountered, and critical strain measurements during the test matched engineers' predictions.

"The results validate our design and our design process," said Michael Gibbons, X-32 air vehicle structures manager. To achieve the program's challenging affordability goals, Boeing has applied the latest lean design and manufacturing processes to its JSF, which have paid off in precision and first-time quality. "This test program demonstrates once again the Boeing commitment to delivering both innovation and value without compromise," Gibbons added.

The testing was completed Oct. 9. In all, 34 individual structure tests were completed in 26 days.

The X-32A entered these tests structurally complete. An active onboard vehicle management system that drove fully operational control surfaces helped to meet the aggressive test schedule.

"Using the vehicle management system and the onboard hydraulics and mechanical systems allowed us to test a more integrated, mature system," said Thomas Turner, engineering manager of X-32 structural test. "It eliminated costly and non-representative off-aircraft component tests, plus it saved test time by eliminating the need to manually set the control surfaces for each test condition."

Due to the high degree of commonality between the X-32A and X-32B concept demonstrators, the validation of the X-32A's design integrity applies to the X-32B as well. Because the test results were so positive, the X-32B will not require additional testing.

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

The X-32A will begin flight testing in spring 2000.

The company 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 premiere designer and manufacturer of fighter aircraft.

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Note to Editors: A photo of the X-32A in the structural test fixture in Palmdale, Calif., is available digitally or overnight upon request.

For further information:
Mike Tull
(206) 655-865