Boeing JSF X-32B Completes Testing with Supersonic Flights

The Boeing Joint Strike Fighter X-32B concept demonstrator on July 28 ended one of the most successful flight test programs in aviation history with five flights in one day.

On the aircraft's 77th flight, U.S. Marine Corps Maj. Jeff Karnes broke the sound barrier again in the X-32B and demonstrated the range of performance characteristics typical of the operational JSF: a short takeoff, transition to conventional flight, supersonic flight and transition back to STOVL (Short Take Off/Vertical Landing) mode before making a slow landing.

The last flight of the day -- the 78th and final flight of the X-32B flight-test program -- was flown by U.K. Royal Navy Lt. Cdr. Paul Stone and included a series of supersonic runs.

"Few, if any, flight-test programs have been more successful than the X-32," said Jerry Daniels, president and chief executive officer of Boeing Military Aircraft and Missile Systems. "It is a testament to the dedicated people on the Boeing JSF One Team that the X-32's demonstrated performance so precisely matched predictions."

"The X-32B test program was a resounding success thanks in part to our innovative use of modeling and simulation as well as the outstanding efforts of the Boeing One Team," said Frank Statkus, Boeing vice president and JSF general manager. "The government has made it clear that it's buying not only an airplane but also a management team. Our performance during this test program says everything about our team."

Early on in the concept-demonstration phase of the program, Boeing formed an integrated partnership with 33 world-class domestic and international companies; this is the JSF One Team that will carry forward into the next phase of the program. Statkus said the X-32A and B flight test programs show the customer what to expect from Boeing in the next phase of the program. "We said we would complete X-32A flight testing in six months and we did it in four, and we stuck to our schedule with the X-32B plane as well. We met or surpassed every requirement."

During flight testing, the X-32B demonstrated more than 100 rapid, one-to-three second transitions to and from STOVL mode as well as the low pilot workload necessary for operational sorties. Since the start of flight testing in March, the X-32B has clearly shown that the Boeing direct-lift approach to the STOVL requirement is the simplest, most reliable and lowest-risk solution. "The plane performed beautifully throughout flight test. All three pilots were extremely impressed with its stability, handling qualities and unprecedented sortie rate," said Dennis O'Donoghue, Boeing chief STOVL test pilot. "During the build-down from conventional flight to hover and vertical landing, we flew 30 flights in eight days. And now, on the last day of flight test, we flew five times in one day. That's just amazing."

Among the X-32B flight-test program milestones were:

- **X-32B FIRST FLIGHT:** The X-32B began its four-month flight-test program March 29 with a 50-minute flight from Palmdale, Calif., to Edwards Air Force Base, Calif.
- **X-32B COMPLETES JSF PROGRAM'S FIRST IN-FLIGHT TRANSITIONS:** On April 16, the X-32B completed a total of eight in-flight transitions from conventional to STOVL flight mode, confirming the flexibility and ease of operation of the Boeing direct lift system. Overall, more than 100 one-to-three second in-flight transitions were made during STOVL flight-testing.
- **X-32B ARRIVES AT PATUXENT RIVER:** The X-32B landed at NAS Patuxent River, Md., May 11, marking the aircraft's entry into the final phase of its flight-test program.
- **X-32B COMPLETES PROGRAM'S FIRST HOVERS FOLLOWING TRANSITION:** On June 24, the X-32B became the first JSF demonstrator to transition from conventional flight to a hover. During five flights, the plane completed four hovers for a total of eight minutes. The longest sustained hover was two minutes and 42 seconds.
- **X-32B COMPLETES FIRST VERTICAL LANDINGS:** Three days after its first hovers, on June 27, the X-32B completed the program's first vertical landings after transitioning from conventional to vertical flight
- **X-32B COMPLETES GOVERNMENT FLIGHT-TEST REQUIREMENTS:** With a series of short takeoffs on July 1, the Boeing JSF team completed all of its government-defined flight-test requirements, a full month and a half ahead of the program-mandated deadline.
- **GOVERNMENT PILOTS COMPLETE VERTICAL LANDINGS:** Maj. Jeff Karnes, U.S. Marine Corps, completed a vertical landing in the X-32B July 3. Royal Navy Lt. Cmdr. Paul Stone became the first pilot from the United Kingdom to complete a vertical landing in the X-32B July 5.
- **X-32B GOES SUPERSONIC:** On July 17, the X-32B achieved supersonic flight during both its 67th and 68th flights.

During the JSF program's concept-demonstration phase, Boeing clearly accomplished the three main customer objectives by demonstrating:

- Approximately 90 percent commonality between the two Boeing concept demonstrators
- Outstanding low-speed carrier approach handling qualities

- The obvious advantages of its direct-lift STOVL system.

Underscoring the commonality of its JSF design, Boeing used only two aircraft to demonstrate requirements for the U.S. Air Force, Navy, Marine Corps, U.K. Royal Navy and Royal Air Force in the current concept-demonstration phase of the program.

The Boeing X-32A aircraft, which demonstrated both aircraft-carrier and conventional-takeoff-and-landing objectives, completed its flight-test program Feb. 3 after 66 flights and 50.4 hours with six different pilots at the controls.

Boeing is competing to build the JSF under a four-year U.S. Air Force, Navy and Marine Corps concept-demonstrator contract. A competition winner is scheduled to be selected in October.

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