Boeing Begins JSF Avionics Testing Aboard 737 Flying Laboratory

The Boeing Joint Strike Fighter One Team yesterday began five months of integrated avionics testing with the first test flight of its Avionics Flying Laboratory.

The AFL, a modified 737-200, will significantly reduce technical risk in JSF avionics development by letting engineers evaluate and troubleshoot the avionics systems before they are installed on the JSF. Reduced technical risk translates into significantly reduced avionics costs later in the program.

"Early AFL testing will eliminate much of the guesswork that otherwise goes into avionics performance projections," said Dan Cossano, manager of Boeing JSF Mission Systems. "We will save development time and costs because the AFL allows us to test more efficiently than with a fighter platform."

During the first flight, engineers tested the core avionics processor, various sensors and mission software.

The AFL is fully instrumented for developing and assessing avionics-system performance. The most visible modification is a four-foot extension to the nose that houses a developmental radar and other sensors. A representative JSF cockpit has been installed in the airplane's cabin. The AFL carries a crew of avionics engineers who monitor test data, fix problems and direct testing to take advantage of emerging results.

With near instantaneous fusion of data from on-board and off-board systems including other aircraft and the battlefield, the Boeing JSF avionics system frees the pilot from actively managing data flow in the cockpit. That allows the pilot to be a more effective tactician, better focused on the mission at hand.

Key components to be tested include radio-frequency and electro-optical sensors and a prototype core processor. The processor, which runs the mission-system software, uses an open architecture that enables reuse and easy portability.

With more than 200 hours of F-22 avionics testing aboard a Boeing 757 flying test bed under its belt, Boeing has already demonstrated how its test-bed approach can reduce avionics development costs, risk and future flight-test hours.

The lab's superior range allows more thorough testing. It carries more instrumentation than a fighter can and doubles as a laboratory on the ground for tests that don't require flight conditions. Unlike a static ground-based lab, the AFL will demonstrate JSF capabilities in a dynamic, airborne setting against a wide variety of real targets embedded in their environments.

"Using the AFL adds a high degree of fidelity to the Boeing JSF proposal by injecting actual flight-test data into the assessments of the mission-systems performance," Cossano said. This testing supports the current concept development phase of the JSF program and runs in parallel with flight testing of the X-32 A and B concept demonstrators.

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.

Note to Editors: A photograph of the 737 Avionics Flying Laboratory is available electronically, or overnight, by calling 206/655-1198.

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