Boeing Begins Joint Strike Fighter Engine Tests

Tests to validate the performance and operational response for the first Boeing Joint Strike Fighter(JSF/X-32) demonstrator aircraft engine are under way at Pratt & Whitney's West Palm Beach, Fla., facility. Successful test results will move Boeing a step closer to achieving flight certification for the two X-32 demonstrator aircraft.

"The Boeing JSF concept combines the world's most powerful fighter engine with a simple and low-risk direct-lift system design," said Frank Statkus, Boeing vice president/general manager and JSF program manager. "Successful completion of the first engine run is a tremendous step toward the most affordable JSF propulsion system."

Pratt & Whitney is developing two JSF119-614 engines which are derivatives of the F119 engine used on the F-22 air dominance fighter. Both engines are made from the same core. One engine will perform conventional takeoff and landing (CTOL) operations, while the second engine is integrated with direct-lift system components for short takeoff and vertical landing (STOVL) operations.

Initial sea-level testing of the Boeing CTOL engine will continue for approximately one month. Afterward, the engine will undergo altitude testing at the Arnold Engineering Development Center in Tullahoma, Tenn. Testing of the Boeing STOVL engine will begin in late 1998 at Pratt & Whitney's Florida test facility to measure vertical and horizontal thrust, including pitch, roll and yaw.

The JSF119-614 propulsion system is an integrated system consisting of the F119 core, Pratt & Whitney's tailored low spool, developed augmentor and cruise nozzle, and - for STOVL operations - Rolls-Royce's unique direct-lift system components. The engine test program will verify the performance and operability of these components, which together form the nucleus of the Boeing JSF propulsion system for the two X-32 aircraft.

The Boeing JSF propulsion system provides a next-generation solution that builds on Pratt & Whitney's F119 expertise and Rolls-Royce's experience in designing and building the direct-lift propulsion system for the Harrier AV-8B. A direct-lift approach has been used in operational Harriers for more than a decade and is one of the simplest, most efficient approaches to STOVL flight. The JSF119-614 design provides for both conventional and vertical flight using a proven two-dimensional, flow-blocking cruise nozzle, coupled with a simple direct-lift nozzle system.

Steve Kyle, JSF propulsion system integrated product team leader, said Boeing is very pleased with the early results. "The JSF119-614 engine is a highly efficient and value-added solution for the JSF," Kyle said. "Our propulsion system design is straightforward for both up-and-away and STOVL operations. Verifying the performance of the engine that's at the core of our system is what these tests are about."

Boeing is competing to build the JSF under a four-year joint U.S. Navy and Air Force concept demonstration phase contract, and is defining the characteristics of the operational aircraft. One X-32 aircraft will demonstrate characteristics of the Air Force's CTOL variant and the Navy's carrier variant; the second will demonstrate the STOVL variant designed for use by the U.S. Marine Corps and the British Royal Navy.

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