Assembly of Boeing Joint Strike Fighter Mid-Fuselage Starts Two Months Early

Boeing has begun assembly of the mid-fuselage for its Joint Strike Fighter (JSF) X-32A concept demonstrator aircraft - two months ahead of schedule.

"Our aggressive pace on this program reflects the dedication and enthusiasm of our JSF team and their commitment to effectively employ lean design and manufacturing technologies to cut cycle time, reduce cost and improve quality," said Frank Statkus, Boeing vice president and JSF program manager.

With the frames, bulkheads and keel of the X-32A mid-fuselage already loaded in the assembly tool, workers began attaching the first bulkhead to the keel.

This milestone marks the beginning of JSF assembly activity at the Boeing Phantom Works Developmental Assembly Site here. Boeing recently established the prototyping center to assure the best value for its customers in assembling, integrating and testing developmental aircraft such as the JSF.

The facility's approach is evident in the lean crew working on the Boeing JSF. Fewer than 15 people currently support the JSF program in Palmdale, and the total number of employees is expected to peak at only 125 people.

Through "virtual co-location," Boeing is able to minimize the number of people working on-site on the fighter. By using Net Meeting and interactive presentation tools on a daily basis, all JSF program resources in Palmdale, Seattle, St. Louis, and Tulsa, Okla., are brought to one virtual location. This type of video conferencing brings together the shop floor and design teams.

"Utilizing a single source of real-time data across our geographical locations allows us to reduce cycle time in working design issues," Statkus said.

Boeing is building two JSF aircraft - the X-32A and the X-32B - as part of the current concept demonstration phase. Assembly of both aircraft, including integration and checkout of the fuselage, mating of the fuselage, wing and tail assemblies and module build-up, is being done at the site.

The first JSF module assembly - the forward fuselage - began one month ahead of schedule last month at Boeing facilities in St. Louis. The forward fuselage is scheduled for completion in the spring of 1999, at which time it will be sent to the Palmdale facility for mating to the mid-fuselage.

"At the rate we're progressing, we can beat our schedule," said Jack Stone, head of the Assembly, Integration and Test Center. "And with all of our assembly tools already in place, we're prepared to sustain this pace."

Advanced design tools are helping Boeing cut design cycle times and costs by 30 to 40 percent, and are expected to reduce production cycle time by 25 percent.

"The use of advanced 3-D modeling and assembly simulation, Automated Numerical Control and low-cost assembly tooling has helped us meet our affordability initiatives and aggressive schedules in JSF development," Statkus said.

These tools allow designs to be created and changed very quickly. Hardware can be machined without first having to produce expensive try-out parts. They also allow assembly processes to be simulated virtually, thereby avoiding potentially costly parts interferences during the actual assembly process.

Self-locating features designed into the parts and computer-aided tools and measuring equipment have been used to develop a low-cost assembly approach that is simple, flexible and inexpensive.

Together, these innovative techniques are helping Boeing reduce tooling requirements by 75 percent over requirements for the YF-22 prototype, and cut tooling costs for the concept demonstrators by more than half.

Boeing is competing to build the JSF under a four-year joint U.S. Air Force, Navy and Marine Corps concept demonstration phase contract, while also defining the characteristics of the operational aircraft. The X-32A aircraft will demonstrate the characteristics of the Air Force's conventional takeoff and landing variant and the Navy's carrier variant. The X-32B will demonstrate the short takeoff/vertical landing variant for use by the U.S. Marine Corps and the U.K. Royal Navy. A competition winner will be selected in 2001.

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