Boeing Begins Early Assembly of Second JSF Forebody

Continuing its aggressive pace of development, Boeing began assembling the forward fuselage of its second Joint Strike Fighter (JSF) concept demonstrator -- the X-32B -- more than two months ahead of schedule.

"Our use of lean design and manufacturing processes is definitely paying off in terms of time and cost savings on this program," said Frank Statkus, Boeing vice president - general manager of JSF. "So far, we've started each fuselage section of X-32A and X-32B ahead of schedule, and believe we will continue this aggressive pace throughout the program."

Assembly of the X-32B forward fuselage, or forebody, began Sept. 23 at the Phantom Works prototyping center in St. Louis, where workers placed five aluminum frames and a large, one-piece inlet duct into a simple, low-cost holding fixture.

Parts of the holding fixture had been previously used for the forebody of the first concept demonstrator -- the X-32A -- which Boeing began assembling in St. Louis on July 8, a month ahead of schedule. Progress on the X-32A had allowed parts of the fixture to be moved for start of the X-32B.

Meanwhile, assembly of the X-32A's center fuselage started Aug. 21, also two months ahead of schedule, at the Boeing X-vehicle assembly, integration and test facility in Palmdale, Calif., where both concept demonstrators will undergo final assembly and test.

"Our assemblies are coming together with incredible ease and speed, thanks to the advanced design and manufacturing techniques we've been using," said Jerry Ennis, vice president of advanced manufacturing, prototyping and produce processes in the Boeing Phantom Works. "These techniques are allowing us to set new standards in precision and first-time quality and to achieve our affordability goals."

According to Ennis, advanced design and manufacturing techniques have been used to cut development time and cost by up to 50 percent in some areas. Virtual reality was used, for example, to design and verify structural designs and manufacturing processes in record time without having to produce expensive prototype hardware.

Hardware that is produced, such as the aluminum frames and composite inlet duct, is coming out with first-time quality from automatic numeric controlled machines whose programs are automatically translated from a common design data base. Self-locating features designed into the parts, allow for quick and easy assembly in simple, inexpensive holding fixtures instead of expensive hard tooling.

The assembly of the X-32B forebody is scheduled to be completed next summer and delivered to Palmdale for the final assembly of this concept demonstrator. The X-32B will demonstrate the short takeoff/vertical landing variant of the JSF being developed for the U.S. Marine Corps and the U.K. Royal Navy.

Final assembly of the X-32A is set to begin next spring. This aircraft will demonstrate the characteristics of the Air Force's conventional takeoff and landing variant and the Navy's carrier variant.

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 preferred weapon system concept. A competition winner will be selected in 2001.

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