Boeing Joint Strike Fighter has Record-Setting Year

For the Boeing Joint Strike Fighter team, 2000 was a year of unprecedented accomplishments culminating in a record-setting supersonic flight. Frank Statkus, Boeing vice president and JSF program general manager, called 2000 "a year that will go down in aviation history books as one of the most significant because of what our JSF team has done."

Among the more notable of the year's accomplishments for the Boeing JSF team:

- **Validation of JSF Design With High-Fidelity Stealth ModelThe Boeing JSF One**
  Team validated the radar, antenna and stealth performance of its concept for the operational JSF using a high-fidelity, full-scale aircraft model.
- **Demonstration of JSF Avionics Multi-Sensor Fusion**
  In May, Boeing demonstrated multi-sensor fusion of its JSF avionics aboard the company's 737 Avionics Flying Laboratory. The ability to fuse inputs from multiple sensors and display the information in an easy-to-use format for the pilot is a key element of the Boeing JSF integrated avionics.
- **Breakthroughs in Computer-Aided Measurement Systems**
  Sophisticated electronic measurement tools that helped Boeing reduce tooling costs for its JSF X-32 concept demonstrators by 72 percent over the F-22 are being used to achieve even greater cost reductions in the next phase of the JSF program.
- **Unequalled Producibility Improvements**
  Boeing made unprecedented advances during assembly of its JSF X-32 concept demonstration aircraft that are the direct result of the company's "design anywhere, build anywhere" philosophy. The results were about 80 percent fewer defects in the X-32 than in the equivalent build of the YF-22.
- **Demonstration of JSF Weapon System Capabilities**
  In June, Boeing demonstrated the integrated weapon system capabilities of its JSF design during a live-fire exercise conducted at White Sands Missile Range, N.M. The Boeing Avionics Flying Laboratory used its JSF mission systems suite to gather targeting data from off-board systems, fuse it with data gathered from on-board systems and then provide refined targeting information to an F-15, allowing it to successfully attack a ground target with a GPS-guided Joint Direct Attack Munition.
- **JSF Flies 100 Missions During Fourth Full-Mission Simulation**
  Boeing completed the fourth full-mission simulation of its JSF operational concept with pilots from the U.S. Air Force, Navy, Marine Corps and the U.K. Royal Navy flying 100 simulated air-to-air and air-to-ground missions to locate and defeat enemy forces.
- **Demonstration of Joint JSF and F-15 Training Simulation**
  Also in June, Boeing demonstrated the ability to link its JSF full-mission simulator in St. Louis with U.S. Air Force Air Combat Command F-15 simulators at Eglin Air Force Base, Fla., in order to conduct real-time cooperative training missions. The scenarios, with JSF and F-15 pilots flying together in the same threat environment, demonstrated how aircrews at different locations, with different types of aircraft, can practice JSF-representative missions together via a government-standard high-level architecture data network.
- **Demonstration of JSF Life-Cycle Cost Reductions**
  Boeing demonstrated to the customer how its JSF autonomic logistics system and key enabling technologies have been integrated into the weapon system and will reduce JSF life-cycle costs by more than 30 percent over legacy systems.
- **STOVL Propulsion System Installation**
  In July, Boeing installed the propulsion system for its short-takeoff-and-vertical- landing (STOVL) JSF concept demonstrator aircraft in less than four hours, the second time in three months the team installed a JSF propulsion system quickly and without incident.
- **STOVL Propulsion Testing on Test Stand**
  By the end of July, Boeing had completed a series of tests of its STOVL propulsion system on the test stand, successfully accomplishing more than 220 transitions between conventional and STOVL operating modes. Since then, in more than 500 trials on the STOVL engine run stand, transition times have repeatedly been accomplished in one to three seconds, critically important for unrestricted STOVL operations and aircraft safety.
- **X-32A First Flight**
  The Boeing Joint Strike Fighter X-32A concept demonstrator successfully recorded a major milestone Sept. 18 when the airplane made its initial flight, flying from Palmdale, Calif., and landing at Edwards Air Force Base, Calif. The flight marked the X-32A's entry into a five-month flight-test program.
- **Completion of JSF X-32B Engine Runs**
  Four days after the first flight of its X-32A concept demonstrator aircraft, Boeing moved its X-32B demonstrator closer to its own first flight with completion of the initial phase of engine runs. The smooth operation of the engine, installed in the STOVL aircraft, confirmed all performance predictions.

- **Completion of Low-Speed Aircraft Carrier Tests**
  Flying as many as five flights a day the week of Dec. 18, the X-32A concept demonstrator aircraft successfully completed low-speed approach aircraft carrier variant (CV) tests -- one of the U.S. government's three main program objectives. The milestone marked the completion of 100 percent of the government-defined CV test objectives.
- **First JSF X-32A Aerial Refueling**
  The Boeing X-32A completed its first aerial refueling in December. Flying at 20,000 feet and 235 knots, the X-32A maneuvered into the refueling drogue and effortlessly maintained its position below the KC-10 tanker, successfully validating the handling qualities required for the Navy air-refueling task.
- **Supersonic Flight**
  The Boeing X-32A broke the sound barrier Dec. 21, when Lt. Col. Edward Cabrera, U.S. Air Force lead test pilot assigned to the Boeing program, took the aircraft to 30,000 feet and approached and exceeded Mach 1.0.

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