

Tech focus

This month's focus is on some of the capabilities offered by suppliers and prime contractors for high-profile military programs.

F-35 approaches test-flight phase

It was a big year for the F-35 program in 2006, the long-awaited first flight of "the most powerful single-engine fighter ever made" having been scheduled to take place late in the year.

The Joint Strike Fighter had not taken to the skies as of November 8. At that point, fewer than 10 of the plane's 126 checkouts remained to be completed, according to John Kent, a spokesman for

prime contractor **Lockheed Martin**.

"We plan to run the Integrated Power Package [a combined starter/generator/environmental control system/backup power supply], then the engine, then begin taxi testing, and finally first flight," he said. "Several remaining safety-of-flight certifications are in process."

A conventional-takeoff-and-landing (CTOL) variant will be flown in the first

flight (the other types are a short takeoff/vertical landing variant [STOVL] and an aircraft carrier variant). In all, 15 F-35s will undergo flight testing, seven will undergo static testing, and one will be used for aircraft radar signature validation.

Nine of the 15 flight test aircraft will undergo evaluation at a new \$24 million Patuxent River Naval Air Station in Maryland, with the first one (a STOVL type) arriving in early 2008. Testing on the carrier variant will begin there in 2009. Testing of the CTOL variant will take place at Edwards Air Force Base in California. Lockheed Martin says the flight-test program will be the most comprehensive and complex in history.

All variants will undergo initial flight testing at the company's facilities in Fort Worth, TX.

The F-35 will replace several existing aircraft models used by North American and European militaries, including the U.S.'s F-16, F/A-18 Hornet, and AV-8B Harriers, and the UK's Harrier GR.7s.

During the course of 2006, the plane passed a number of milestones, including manufacturing completion of the first unit on February 17. Ground testing began shortly thereafter. Those tests involve, among other things, checks for fuel-system and structural integrity. Ground-vibration testing followed and was completed ahead of schedule.

On July 7, during an unveiling ceremony of the first plane at company facilities in Fort Worth, TX, the aircraft received an official name: "Lightning II." The name had been applied to two iconic fighters from years past: the World War II-era Lockheed P-38 Lightning and a 1950s English Electric (a JSF principal partner now known as **BAE Systems**) supersonic jet.

The first series of engine runs in the F-35 took place in late summer.

Patrick Ponticel



Ground-vibration testing for the F-35 was completed earlier this year.



The first series of engine runs in the F-35 took place in late summer. The aircraft is shown here with its afterburner on.

Smiths gets electrical power contract

Smiths Aerospace will supply Boeing with Regulated Transformer Rectifier Units (R/TRU) for the C-130 Avionics Modernization Program (AMP) aircraft. The units will be manufactured at Smiths' facility in New York, with deliveries beginning in 2008 and continuing beyond 2016.

"As part of our dedicated Electrical Power business, this technology provides a unique solution for our customer in load sharing, while providing additional power sources," said John Ferrie, President, Smiths Aerospace. "Combined with our avionics systems, this brings our

erate within the most stringent environments and are qualified to military standards for mission-critical equipment, says Smiths. Power conversion products and custom power supplies designed and manufactured by Smiths are used in many aircraft platforms including military air transport, bombers, fighters, helicopters, space vehicles, commercial airliners, and missiles. Smiths also supplies power and products for land-based and vehicle applications.

Besides the R/TRU, other systems supplied by Smiths for the C-130 AMP include multifunction control displays, mis-



Smiths Aerospace provides a number of systems for the C-130 AMP aircraft including Regulated Transformer Rectifier Units. Boeing is also modifying the C-130 Aircrew Training System as part of AMP.

content on the C-130 AMP to more than \$300 million over the life of the program."

The R/TRU meets performance specifications with special features for load sharing, while providing the dc power source on the aircraft. Each of the six R/TRUs operates in parallel and from different voltage sources, without degradation of the system in the event of a single unit failure.

The units convert and regulate 400-Hz inputs into 28-V dc outputs. They will op-

eration display processor, an integrated standby instrument system, a flight-management system including a communications management unit and terrain awareness warning system integrated onto a single PowerPC, flight data recorder/cockpit voice recorder, aircraft interface unit, mission display processor including digital map, digital generator control units, and bus switch units.

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