

Lockheed Martin F/A-22 Raptor Records First Supersonic Aerial Target Intercept

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The Lockheed Martin -led F/A-22 Raptor air dominance fighter program completed another key flight test goal on Nov. 5, with the successful missile interception of an unmanned drone while both aircraft and target were flying faster than the speed of sound.

This test satisfies one of several Pentagon-mandated milestones that must be achieved prior to the U.S. Air Force awarding the F/A-22 Raptor industry team the Lot 3 production contract.

"This test marked the first time a Raptor, flying at supersonic speeds, has been used to detect, track and launch a radar-guided missile against a subscale aerial target also traveling faster than the speed of sound," said Lockheed Martin's F/A-22 Avionics Systems Manager Tony Keith. "This test effectively and successfully demonstrated the 'first-look, first-shoot, first-kill' capability of the F/A-22's advanced integrated avionics."

During the November 5, test mission U.S. Air Force Maj. James Dutton launched and guided an unarmed, radar-guided, medium-range AIM-120 AMRAAM missile to the target while piloting his aircraft -- Raptor 07, the seventh flight test aircraft built -- at 1.5 Mach (1.5 times the speed of sound, or approximately 900 mph) at 35,000 feet above the Pacific Missile Test Range off the coast of southern California.

This test was especially challenging for the Raptor as the target was flying at an altitude of 50,000 feet - 15,000 feet above the F/A-22 -- and approaching the fighter from directly in front.

Post-flight analysis showed the AMRAAM passed close enough to the AQM-37 unmanned drone -- which had been modified to emulate the radar cross-section of a small conventional fighter aircraft -- that had the missile been armed with its standard proximity-fuze warhead, the AIM-120 would have detonated and destroyed the target. The AMRAAM missile carried no warhead, but was equipped with a telemetry package and GPS-based time/space-positioning instrumentation to help determine missile accuracy.

"This 'nose-to-nose, 12 o'clock-high look-up' shot would be extremely difficult for today's fighters because of the small size and extremely quick closure rates of the target drone and intercept aircraft," Keith added. "But the F/A-22's avionics acquired the target at a distance sufficient to allow the pilot ample time to make a successful intercept."

Raptor 07 is one of seven developmental flight test aircraft currently operating from the Air Force Flight Test Center at Edwards AFB, Calif. To date, the flight test team has accumulated more than 2,500 flight test hours during more than 1160 test missions.

In a related development, Raptor 4006 -- also assigned to Edwards AFB -- has successfully flown for the first time equipped with avionics software block 3.1.1 FT-1, a software upgrade that increases the F/A-22's avionics capability and stability. Flight tests involving this software upgrade mark an important milestone on the road to supporting the timely start of Dedicated Operational Test and Evaluation (DIOT&E), currently planned for next summer.

The F/A-22 Raptor is built by Lockheed Martin in partnership with Boeing, powered by Pratt & Whitney engines, and made from parts and subsystems provided by approximately 1,200 subcontractors and suppliers in 46 states. Principal aircraft production activities take place at Lockheed Martin facilities in Marietta, Ga., Meridian, Miss., Fort Worth, Texas, and Palmdale, Calif., as well as at Boeing's plant in Seattle, Wash. The engines are built in East Hartford, Conn.

Final assembly and initial flight testing of the Raptor occurs at the Marietta factory, headquarters for the F/A-22 program's contractor team. The Raptor's low-observable control surface edges, antennas and radomes are built in Palmdale while its mid-fuselage is built in Fort Worth. Boeing builds the aircraft's aft-fuselage and wings, while Lockheed Martin is the program's principal systems integrator.

The Raptor will replace the aging F-15 Eagle as America's premier front-line fighter jet starting in 2005. The Raptor has unprecedented fighter and attack capabilities with its balanced design of stealth, supercruise speed and extreme agility, along with advanced integrated avionics and the pilot-friendly cockpit. These attributes make the Raptor truly transformational and will support the goal of quick, decisive victory in future conflicts, saving American and allied lives.

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