

Dual role, more capabilities

F-15E, with many new technologies, first took to the air 20 years ago

By LARRY MERRITT

Just after 11 a.m. on Dec. 11, 1986—20 years ago this month—an F-15 Eagle, designed for double duty as a fighter and a bomber, roared down the runway at Lambert–St. Louis International Airport and took to the air for the first time.

Gary Jennings, F-15 project test pilot for McDonnell Douglas (now part of Boeing) flew that 75-minute flight. “It was a great flight,” Jennings said after landing. “It flew very well, very much like the best performance yardsticks we have: the other F-15s we deliver.”

Although the new Eagle did look a lot like the other approximately 850 F-15s delivered up to that time, it was truly a new aircraft.

Besides its new charcoal-grey paint scheme, the plane had a back seat for a

second crew member to operate a ground-attack weapons delivery system. Its cockpit incorporated the latest in advanced avionics, controls and displays. More powerful engines increased its performance. An internal redesign with a stronger structure allowed heavier takeoff weights and doubled the original F-15’s service life.

The plane also had a new designation and name: the F-15E Strike Eagle.

The original F-15 had been designed as a multirole aircraft, continuing a McDonnell Douglas tradition that included the F2H Banshee, F-101 Voodoo and the F-4 Phantom. But because of the F-15’s unsurpassed air-to-air record, the Eagle’s air-to-ground capabilities did not receive as much notice.

That changed when U.S. Air Force officials began looking for a replacement for its fleet of F-111 strike aircraft. They wanted an aircraft that could do everything the F-111 could do—carry heavy, precision-guided payloads long distances at night and in bad weather—but, unlike the F-111, an aircraft that could carry out bombing missions with no fighter escort. This led to the formation of the Dual Role Fighter program.

In the meantime, using company funds,

McDonnell Douglas had been working on such an aircraft, converting an early two-seat F-15B trainer as a strike-fighter flight demonstrator.

After a six-month flight evaluation and competition between two of the United States’ frontline fighter aircraft, the F-15 and the F-16, the Air Force selected the F-15 as the aircraft best suited to fill its new dual-role fighter mission.

Engineers in St. Louis developed innovative technologies that allowed the F-15E to take on air-to-ground missions while maintaining its superior air-to-air capabilities.

One of these was “tangential weapons carriage” for the F-15’s conformal fuel tanks. To add range to the F-15C air-superiority fighter, engineers had designed long, slim tanks that hugged each side of the Eagle’s lower fuselage. For the F-15E, engineers used computer-aided design and drafting techniques to add two rows of 6-inch (15-centimeter) stub pylons to the tanks for attaching weapons. These replaced the larger, heavier bomb racks that had attached to the aircraft’s underside. The new design held the bombs closer to the fuselage, reducing drag and giving added lift.

More innovation involved a large air-combat simulator built in St. Louis to develop such new F-15E technologies as improved radar, a low-altitude terrain-following system, forward-looking infrared sensors and enhanced navigation systems. The simulator was the first to integrate both air-to-air and air-to-ground combat missions simultaneously. Pilots and backseat weapons-system operators flew hundreds of bombing runs in an actual F-15E cockpit inside the simulator, using real data fed



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This January 1987 photo shows F-15 project pilot Gary Jennings and senior systems operator John York performing a test flight over Missouri. The mission was the F-15E’s second flight and its first with two crew members.



At the first F-15E's rollout ceremony, which took place one week after its Dec. 11, 1986, first flight, hundreds of employees and guests converged on the aircraft for a closer look.

to the aircraft's new central computer. Long before the real F-15E made its first flight, the simulator F-15E had successfully handled surface-to-air threats, engaged in air-to-air combat and negotiated complex paths to ground targets.

The simulator proved to the Air Force

what the F-15E could do. "That's the beauty of simulation," project pilot Jennings said. "It was tangible; you could touch it and you could fly it before the same equipment was flown in the real airplane."

The F-15E made its public debut a week after its first flight. Then—Secretary of the U.S. Air Force Edward Aldridge, the principal speaker, called the Strike Eagle unveiling a "landmark event in the modernization of our tactical air forces." Aldridge added that the new aircraft followed a "trail blazed by the original F-15 Eagle as one of the safest, most capable aircraft in our inventory ... the latest chapter in a real success story."

Since then, 236 F-15E Strike Eagles have been delivered to the U.S. Air Force, and 72 F-15S derivatives have been delivered to Saudi Arabia. Also, Israel has received 25 F-15I Thunder strike fighters. In 2005, deliveries of 40 more-advanced versions, the F-15K, began to the Republic of Korea Air Force. And in 2009 Singapore will receive its first F-15SG.

With the Strike Eagle's broad capability and ability to integrate future advanced technologies, it promises to maintain its place in the sky as the world's premier multirole fighter for decades to come. ■

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