

411 FLIGHT TEST SQUADRON



MISSION

Performed flight testing and evaluation to select the Air Force's advanced tactical fighter of the future.

LINEAGE

6511 Test Squadron designated and activated, 10 Mar 1989

Redesignated 411 Test Squadron, 2 Oct 1992

Redesignated 411 Flight Test Squadron, 1 Mar 1994

STATIONS

Edwards AFB, CA, 10 Mar 1989

ASSIGNMENTS

6510 (later, 412 Test) Wing, 10 Mar 1989

412 Operations Group, 1 Oct 1993

WEAPON SYSTEMS

YF-22, 1989

YF-23, 1989-1991

COMMANDERS

LTC Edward A. Cabrera

HONORS

Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

EMBLEM



6511 Test Squadron emblem: Azure, issued from base, a wizard face of the like, eyes Gules, eyebrows, robe, and cap Sable, the robe charged with five mullets and the cap semy of six mullets Argent. Overall, a crystal ball of the last emitting to dexter two lightning flashes bendwise Or. To sinister, a fusil of the second trailing an arced contrail bendwise sinister Yellow inflamed Red; all within a diminished bordure of the first. (Approved, 2 Mar 1990)

MOTTO

ASSESSING THE FUTURE

NICKNAME

OPERATIONS

Supersonic, super maneuverable and super lethal—the F-22 delivers definitive air superiority against any foe. The F-22 Raptor flight test program is only the most recent example of the superior engineering skill and tremendous teamwork that distinguish the 411th Flight Test Squadron. In February 1998, Raptor 4001 arrived at Edwards AFB inside a C-5. Piece by piece, it was reconstructed and by 17 May 1998 the first Raptor was gracing the skies over Edwards. In the year 2000, aircraft 4002 and 4003 swooped in to lead the way to further expand the F-22 flight envelope. By early 2001, Raptors 4004 and 4005, the first mission-avionics capable Raptors, made their grand entrances to start testing the highly sophisticated and capable

avionics suite.

Testing the F-22 is no small task. It takes a dedicated team of personnel working together to prepare the new century's first fighter. Military and government civilian personnel include those assigned to the 411th Flight Test Squadron, 412th Test Wing and 31st Test and Evaluation Squadron. Contractor support includes individuals from Lockheed-Martin, Boeing, Pratt & Whitney, Computer Sciences Corporation, Science Applications International Company and Tybrin Corporation. Working as an integrated "purple" team, the F-22 CTF has accomplished great feats: soaring past the Congressionally-mandated minimum flying hour mark of 183 hours in November 1998, launching an AIM-9 missile in July 2000 and hitting the 1000-hour flying mark in April 2001.

Other accomplishments have included the live launch of an AMRAAM, demonstrating stabilized flight at plus and minus 60 degrees angle-of-attack, and demonstrating multi-sensor fusion. The members of the F-22 CTF and the 411th Flight Test Squadron are very proud of their work and strive to make the F-22 Raptor the best and most powerful air superiority fighter for the next generation of the United States Air Force, living up to its motto, "No One Comes Close."

An F-22 test pilot with the 411th Flight Test Squadron at Edwards AFB, California, carried out the first supersonic release of a GBU-39 Small Diameter Bomb, or SDB, on 11 July. This first supersonic SDB drop was part of a safe separation test program currently being performed to integrate the weapon on the F-22. The GBU-39 is a 250-pound Global Positioning System-guided precision munition capable of destroying stationary targets at standoff distances. Eight prior SDB releases from the F-22 were carried out at subsonic speeds. Additional supersonic releases and later guided drops will take place on the Edwards ranges. The Raptor can carry eight SDBs or two 1,000-pound GBU-32 Joint Direct Attack Munitions internally.

The first airborne separation test of a 250-pound inertial navigation system/Global Positioning System-guided GBU-39 Small Diameter Bomb, or SDB, from the internal weapons bay of an F-22 was successfully carried out during a 5 September flight over the Naval Air Warfare Center at China Lake, California. Maj. Jack Fischer, a 411th Flight Test Squadron test pilot at the Air Force Flight Test Center at Edwards AFB, California, flew the mission in Raptor 08. This first test, one of a series of SDB releases, was made to ensure the weapon would separate from the aircraft cleanly. The Raptor will be able to carry eight GBU-39s in its main weapons bay. 2007

On 22 April 2002, at 1335 EDT, F-22 91-4008, assigned to 411 FLTS, 412 TW, AFFTC, Edwards AFB, CA, executing a planned ferry mission to Edwards AFB, CA took off from Dobbins ARB, GA as Raptor 03, in conjunction with 2 F-15 chase aircraft, Raptor 11/05, and 1 KC-135R, Arris 38. Raptor 03 struck and ingested into the right engine, FI 19-PW-100 P720032, a common loon weighing approximately 8.5 pounds, during rendezvous maneuvering shortly after takeoff. Although damage to the engine was extensive, the engine continued to operate nominally; all readings available to either the pilot or to the mission control team showed normal operation. In fact, if not for other coincident but unrelated malfunctions of the aircraft, the mission might have been continued due to the lack of any discernable malfunction of either FI 19 engine after

the birdstrike. Preflight, start, taxi and takeoff were unremarkable and in compliance with all applicable standards and procedures.

The departure was accomplished as a dual pickup and was likewise unremarkable, until the F-22 struck the bird. Action following the birdstrike was appropriate and entirely within the bounds of normal operational procedures. There were no injuries or deaths and, with the exception of some minor damage to the engine inlet, damage to the aircraft was confined to the structure of the right engine installed in the aircraft. The engine damage consisted of Foreign Object Damage (FOD) and Domestic Object Damage (DOD) caused by ingestion of the bird.

All compressor stages of the engine were damaged beyond current repair capability. Many blades on each rotating and stationary stage of the engine were damaged beyond technically approved limits for repair. Also, each rotating stage is built using a process that combines the rotating wheel with all the blades (airfoils) for that stage in such a fashion that the stage is an integral unit called an Integrally Bladed Rotor (IBR). Consequently, irreparable damage to any one blade causes the entire stage to be irreparable. An IBR, thus damaged, must be replaced. Cost of repair/replacement of the engine was estimated to exceed two million dollars. Damage to the aircraft was caused solely by collision with a bird. No reasonable process could have avoided the collision.

On 25 Mar 2009, at 0927 local Pacific Standard Time, an F-22A aircraft, tail number 91-4008, assigned to the 411th Flight Test Squadron, 412th Test Wing, Edwards Air Force Base (AFB), California, departed Edwards AFB to conduct a weapons integration flight test mission. The mishap mission involved an F-22A mishap test aircraft (MTA) and an F-16D safety chase aircraft operating within restricted airspace 2508 located northeast of Edwards AFB. The MTA was instrumented to transmit flight telemetry data to a team of engineers who monitored MTA performance from the Ridley Mission Control Center.

The mishap test pilot (MTP) performed three similar high-speed, high-performance test maneuvers within specific parameters in order to evaluate how the weapons integration affects aircraft performance. The test parameters for all three maneuvers were Mach 1.60 +/- .02, target g-load, and altitude of 20,800 +/-2000 feet (ft) Mean Sea Level (MSL). To execute the tests, the MTP rolled the MTA inverted, performed half of a split-S maneuver, achieved the specific test point, and recovered by rolling the MTA right side up and pulling out of the dive. The first two test maneuvers were performed without incident. During the third maneuver, the MTA achieved the test point parameters at 22,800 ft MSL; however, the MTP continued a max g pull to an 83 degree nose low dive angle.

When the MTA reached 14,880 ft MSL, the MTP made a full roll stick input to orient the MTA wings level and continued a full aft stick input to decrease the dive angle to approximately 50-degrees nose low. At 7,486 ft MSL, the MTP initiated ejection and immediately sustained fatal injuries. The MTA was destroyed upon ground impact, 35 miles northeast of Edwards AFB. There was minimal damage to private property and no civilian casualties. This mishap was caused by the MTP's adverse physiological reaction to high acceleration forces and subsequent loss of situational awareness (SA) during recovery from the third test maneuver. The MTP channelized his attention to fight off the effects of high g-forces, characterized by grayout, light

loss, and/or tunnel vision; meanwhile, the MTA entered an extreme nose down, high-speed attitude from which safe recovery was not possible. The MTP regained some SA but determined he was too low and descending too fast for a safe recovery. He ejected from the MTA outside the ejection seat design envelope and sustained fatal injury.

25 March 2009– An USAF Lockheed Martin F-22A Block 10 Raptor, *91-4008, Raptor 07*, of the 411th Flight Test Squadron, 412th Test Wing, crashes in the marshy flat land 6 miles N of Harper Dry Lake near Edwards Air Force Base, California, during a weapons integration flight test mission. The single-seater goes down about 1000 hrs. (1300 hrs. ET) for unknown reasons, the officials said. The fighter was on a test mission when it crashed about 35 miles (56 km) NE of Edwards AFB, where it was stationed, the Air Force said in a news release. KWF was David Cooley, 49, a 21-year Air Force veteran who joined Lockheed Martin Corp., the plane's principal contractor, in 2003. Cooley, of Palmdale, was pronounced dead at Victor Valley Community Hospital in Victorville, California. An Air Force investigation finds that the accident occurred after the pilot lost consciousness in a high-gravity maneuver. The reports stated that during the third test of the mission the pilot appeared to have been subjected to increased physiological stress and his lack of awareness delayed a recovery maneuver. At 7,486 ft MSL, the pilot initiated ejection outside of the seat design envelope and immediately sustained fatal injuries.

Air Force Lineage and Honors

Created: 14 Dec 2010

Updated:

Sources

Air Force Historical Research Agency. U.S. Air Force. Maxwell AFB, AL.

Unit History. *Air Force Flight Test Center, Edwards Air Force Base, CA, 50th Anniversary. 1951-2001.*