422nd TEST AND EVALUATION SQUADRON

MISSION

LINEAGE
422nd Night Fighter Squadron constituted, 14 Jul 1943
Activated, 1 Aug 1943
Inactivated, 30 Sep 1945
Redesignated 422nd Fighter Weapons Squadron, 22 Aug 1969
Activated, 15 Oct 1969
Redesignated 422nd Test and Evaluation Squadron, 30 Dec 1981

STATIONS
Orlando AB, FL, 1 Aug 1943
Kissimmee AAFld, FL, 3 Nov 1943
Orlando AB, FL, 6 Jan-13 Feb 1944
Charmy Down, England, 7 Mar 1944
Scorton, England, 6 May 1944 (detachments operated from Hurn, England, 28 Jun- 11 Jul 1944, and Ford, England, 16-c. 26 Jul 1944)
Maupertus, France, 25 Jul 1944
Chateaudun, France, 28 Aug 1944
Florennes, Belgium, 16 Sep 1944
Strassfeld, Germany, 6 Apr 1945
Langensalza, Germany, 24 Apr 1945

Kassel/ Rothwesten, Germany, 26 May-Aug 1945
France, Aug-20 Sep 1945
Camp Myles Standish, MA, 29-30 Sep 1945
Nellis AFB, NV, 15 Oct 1969

ASSIGNMENTS
Air Defense Department, AAF School of Applied Tactics, 1 Aug 1943
481st Night Fighter Operational Training Group, 29 Oct 1943
AAF Tactical Center, 6 Jan 1943
Ninth Air Force, 7 Mar 1944
IX Tactical Air Command, 12 Mar 1944
71st Fighter Wing, 4 May 1944
IX Air Defense Command, 6 Aug 1944
IX Tactical Air Command, 7 Oct 1944-30 Sep 1945
57th Fighter Weapons (later, 57th Tactical Training; 57th Fighter Weapons; 57th Fighter) Wing, 15 Oct 1969
57th Test Group, 1 Nov 1991

WEAPON SYSTEMS
DB-7, 1943
P-70, 1943
YP-61, 1943
P-61, 1944-1945
L-6, 1944
A-20G
P-61A
Oxford, 1944
C-78, 1944
A-20, 1944-1945
A-10
F-111
F-111A
F-111E
F-111F 1977-1992
F-15E
F-16A
F-16B
F-16C
F-16D

COMMANDERS

HONORS
Service Streamers

None

Campaign Streamers
World War II
Normandy
Northern France
Rhineland
Ardennes-Alsace
Central Europe
Air Combat, EAME Theater

Armed Forces Expeditionary Streamers
None

Decorations
Distinguished Unit Citation
Ardennes Salient, 16/17 and 27/28 Dec 1944

Air Force Outstanding Unit Awards
25 Oct 1969-25 Sep 1971
1 Jul 1984- 31 May 1986
1 Jan 1987-31 Dec 1988
1 Jan 1989-31 Dec 1990
1 Aug 1982-31 May 1984
30 Dec 1992-31 Mar 1994
1 Jul 1994-30 Jun 1996
1 Jul 1996-30 Jun 1998
1 Jul 1998-30 Jun 2000
1 Jul 2001-30 Jun 2003
1 Jun 2003-30 Jun 2005
1 Jul 2005-30 Jun 2006
1 Jul 2006-30 Jun 2007
1 Jul 2007-30 Jun 2008

EMBLEM

422nd Night Fighter Squadron emblem: Over and through a Golden Orange disc, wide border Black, charged with eight stars of the first, arranged four, two, and two, a Green caricatured bat in flight, with a look of ferocity on his face, wearing Gray aviator's goggles, holding in the right hand a Gray automatic revolver with smoke issuing from the barrel, and a dagger with White blade, point Red, emitting one drop of blood, held in the left hand. (Approved, 29 Dec 1943)

MOTTO

NICKNAME
Green Bats

OPERATIONS
Combat in ETO, 3 Jul 1944-4 May 1945. Apparently conducted operational testing and evaluation of aircraft weapons systems, including F-111, F-4, A-10, F-15, and F-16, 1969-.

The 422d Test and Evaluation Squadron at Nellis AFB, Nev., is a composite squadron executing HQ ACC-directed operational test and evaluation and tactics development and evaluation for A/OA-10, F-15C, F-15E, F-16C and F-22A hardware, software and weapons upgrades prior to CAF release. The squadron conducts tactics development, foreign materiel exploitations, and special access programs to optimize system combat capability. Conducts field visits to instruct ops aircrews on new systems tactics.

The management of the 422nd Test and Evaluation Squadron transferred from the 57th Wing at Nellis to the 53rd Wing at Eglin. This move consolidated testing in Air Combat Command under one wing
1 Oct 1996

In the late 1970s, the 422nd Fighter Weapons Squadron began flying A-10s. TAG directed the 422nd to conduct operational tests and evaluations of fighter weapons systems and develop tactics for employment of those systems in combat. The JAWS camouflage schemes and the first Charcoal Lizard camouflages were developed by the 422nd. The 422nd was redesignated a Test and 'Evaluation Squadron and placed under the Deputy Commander for Tactics and Test

on December 30, 1981. In October 1996, the 442nd was assigned to the 53rd WG at Eglin AFB.

We joke about our missions against the raptor because they can be fairly boring. We fly to the range. Die. Go to the tanker. Go back out. Die. Go back to the tanker. Go back out. Die a third time. Then we go home," says lt. Col. Paul huffman, the commander of the 64th aggressor squadron at nellis afb, nevada, who has flown as an adversary against the f/a-22 more than twenty times.

"If anyone has a view from an adversary's perspective of what this airplane can do, it has to he us," Huffman adds. "During Initial Operational Test and Evaluation last year, we rarely saw an F/A-22, let alone got a shot at one. From our perspective, the airplane certainly performed better than expected. The F/A-22 is transformational, no doubt about it."

The 64th flew almost 300 sorties against F/A-22 operational test pilots of the 31st Test and Evaluation Squadron based at Edwards AFB, California, during IOT&E last year. "We never got to a merge against a single F/A-22 during IOT&E," Huffman continues.

The 64th Aggressors are well known, as they provide adversary support for Red Flag and other large-scale exercises held at Nellis. Pilots of the 64th use F-16s camouflaged in blue and brown to replicate aircraft, weapons, and tactics employed by potential threats- "We have the experience and knowledge and that's why the Air Force asked our unit to fly against the F/A-22 in IOT&E," Huffman adds. "We flew in every IOT&E mission. We also flew against Raptor pilots in the air combat simulator in Marietta, Georgia."

Many of the IOT&E missions lasted more than three hours and included several engagements. Two F/A-22 pilots often flew against four F-16s from the 64th. Raptor pilots performed pre-strike sweeps, defensive counter-air missions, and surge operations. The sweeps involved clearing a given airspace for attacking aircraft (F-16s, F-I5Es, and other bomb-carrying assets). The defensive counter-air missions involved defending a point or airfield against attacking aircraft. Surges involved producing a certain number of sorties in a prescribed period of time.

Today, operational testing of the Raptor continues with the 422nd Test and Evaluation Squadron at Nellis AFB.

Lt. Col. Robert Garland, a former F-15C pilot who flies Raptors with Ihe 422nd, provides an F/A-22 perspective on air-to-air combat in the Air Force's most advanced fighter: "Six adversaries provide a good workout for two F-15C pilots," he says. "But for two Raptor pilots, defeating six adversaries is about as difficult as eating breakfast. We don't even break a sweat. The Raptor needs a lot of adversaries to create a challenge."

Every new weapon system the Air Force acquires must be formally evaluated before the system enters full-rate production. The tests are overseen by an independent agency the Air Force Operational Test and Evaluation Center located at Kirtland At-'B, New Mexico. The results are

reported to the Office of the Secretary of Defense and to Congress. The report includes a pass or fail grade for both the operational effectiveness and the suitability of the weapon system.

During the operational effectiveness testing portion of the F/A-22 IOT&E, Air Force pilots flew as many as four F/A-22s in a variety of simulated combat scenarios. Five different F/A-22s were flown in the tests, which accounted for more than 500 missions and about 1,300 total flying hours. During suitability testing, the Raptor was appraised for how easily it can be deployed and maintained. The testing involved dozens of Air Force main-lainers and other support personnel from Air Combat Command. Flights originated from Nellis and from Edwards AFB, California.
Lt. Col. Art McGettrick, commander of the 422nd TES, is one of seven USAF pilots who flew the Raptor in those IOT&E missions at Edwards AFB. "I arrived at Nellis from Edwards in October 2004 after wrap¬ping up the IOT&E report," he notes. "I can say the effectiveness tests were a resounding success overall, though details of the report are classified at a high level to protect the capabilities of the airplane.

"The results looked positive for suitability as well," continues McGettrick. "But we didn't have a chance to address all the suitability criteria since they were based on initial operational capability for the F/A-22, the date the aircraft is declared ready for operational service, which is scheduled for December 2005. In other words, we could not meet criteria set for capabilities the aircraft did not yet have. We gave the Raptor a score of'effective and potentially suitable.' The suitability score generated atten¬tion from officials looking for a pass or fail."

The next series of tests, called follow-on test and evaluation or FOT&E, is designed to settle that score. "FOT&E was added to address untested items and to validate fixes to problems found in IOT&E," McGettrick explains. "Our primary focus for FOT&E is the Raptor's air-to-ground capability."

The Raptor's initial air-to-ground capability centers on the 1,000-pound GBU-32 joint direct attack munition, or JDAM. The F/A-22 can carry two of these precision-guided bombs in the main weapon bays. The software required to drop JDAM, not available for 1OT&E, was loaded onto Raptors at the 422nd in early 2005.

The 422nd will perform three primary mission types during FOT&E: surface attack, strategic attack, and retargeting. "For FOT&E, we fly to the northern range with the aircraft in an air-to-ground configuration," explains Maj. Orlando Sanchez, the F/A-22 division commander at the 422nd who is also involved in planning the tests. "We either simulate JDAMs or carry actual JDAMs on board. For surface attack missions, we go against a force of adversaries and try to hit targets inside simulated surface-to-air mis¬sile engagement zones.

"The combination of stealth and supercruise reduces the range of a defensive system more than it would he reduced by stealth or speed alone," explains Maj. Alexus Grynkewich, chief of F/A-22 standards evaluation at the 422nd. "At subsonic speeds, the Raptor would not offer any real advantage over an F-117 in terms of stealth. At supersonic speeds, the Raptor is already out of range by the time a radar system might see it."

According to Grynkewich, the combination of maneuverability and speed offers another example of a combination advantage. "People typi-cally think maneuverability is getting down to a slow-speed dogfight," he says. "We don't expect to get slow with the F/A-22. We will be flying at high speeds and high altitudes, taking long-range shots with air-to-air missiles or precision-guided munitions. The maneuverability provided by the aircraft's thrust vectoring is useful at these high altitudes where the air is so thin that the control surfaces, the flaps and ailerons, are less effective. Thrust vectoring allows us to make turns at those altitudes to get in the best position to launch weapons and escape detection."

Eight F/A-22s will populate the ramp at the 422nd when FOT&E spins up in late summer 2005. Ten pilots will be assigned to the Raptors. About half of them come from the F-15C and the other half from the F-16 and F-15E. Six of the pilots are gradu-ates of the USAF Weapons School and one is a graduate from Test Pilot School.

"We will soon get an F-117 pilot as well," notes McGettrick. He will bring several generations of experience in maximizing stealth. The F-117 community has been doing stealthy air-to-ground attack for twenty years now. We've been doing air-to-ground attacks for about four months in the F/A-22. We think the F-117 experience will be beneficial."

The aircraft are maintained by about 120 maintenance personnel of the 57th Maintenance Group, which falls under the command of the 57th Wing at Nellis. The 422nd TES falls under the 53rd Test and Evaluation Group, which is part of the 53rd Wing based at Eglin AFB, Florida. Though the 57th is gelling some maintainers straight out of technical school, most have transitioned to the F/A-22 from other aircraft.

SSgt. Chris McLean, a Raptor crew chief, brings more than eight years of F-15 experience to the F/A-22. "The transition is like starling over," he says, "because the Raptor is a totally different airplane. Just getting comfortable with an airplane takes about six weeks for someone with experience." The portable maintenance aid, or PMA, accounts for most of that learning curve according to McLean. Ground crews use the ruggedized laptops to launch the F/A-22, to fuel it, to rig its flight controls, and to consult for almost every maintenance task.

"We don't use paper forms or technical orders," says McLean. "All the information we need is right there in the laptop. If I needed to pull a starter in an F-15, I had to look up the technical order number and determine which book of which volume contained the information I needed. Then I had to check out the technical orders at the support section and lug all of the books back to the flight line. With the F/A-22,1 just determine what category the starter is in on my laptop and then click on that category. The tech data appears on the screen. I go to the jet with only my toolbox and my PMA."

In his almost three years of experience maintaining the F/A-22, McLean is impressed with the progress he has seen. "The recent aircraft modifications have been great improvements," he

notes. "The software loads are making the jet belter as well. The Raptor is more stable and more reliable. We recently flew thirty-three sorties without one ground abort."

Sgt. Gaylon Simmons, a weapons expediter for the F/A-22 at Nellis, has been similarly pleased with the Raptor. "Loading an AIM-120 on the aircraft is extremely easy," he says. "We simply attach each missile to two sets of hooks, front and back. We don't have to line up the angles like we do on other aircraft. On an F-16, for example, the tilt and roll angle has to be perfect before we can slide a missile on the rail. On the Raptor, the missile attaches and slides right on."

The F/A-22 is the latest addition to the 422nd, which also performs operational testing for the A-10, F-15C, F-15E, and the F-16. The unit operates six or seven of each aircraft type.

"The Raptor is an airplane in operational test," explains McGettrick. "We are releasing new software and making hardware changes. We are still finding and fixing problems. But we are also doing the same sort of work with every other airplane in this squadron. We receive the newest operational flight programs for all of these aircraft before the software is released to the rest of the Air Force. The same applies to hardware. For example, we're flying an A-10C with a new glass cockpit and the F-16, F-15E, and A-10C with new targeting pods. Our job here in the 422nd is to wring out improvements before the aircraft are delivered to the fleet."

Wringing out software and hardware improvements falls under the heading offeree development evaluation, which is performed separately from IOT&E and FOT&E. While IOT&K and FOT&E are govcrnment-mandated and overseen by the Air Force Operational and Test Center, FDE is directed by Air Combat Command and implemented by the 53rd Wing.

"Our work on FDE informs the F/A-22 tactics manual," notes Garland. "We also write academics describing each system on the airplane. If we're writing about the radar, for example, a pilot from the 422nd assigned to the radar writes a term paper describing how the radar functions. To gain more information about the radar, he works with the various contractors who designed and built the radar. Once the paper is completed, the pilot teaches F/A-22 operators at Langley everything he learned about the radar."

The 422nd also has experts who specialize in tactical topics, such as basic fighter maneuvering, air combat maneuvers, tactical intercepts, dis-similar air combat training, and defensive counter-air. Every Raptor pilot at the 422nd specializes in at least one particular system and in one or more tactics.

"Like our other aircraft at the 422nd, the Raptor will continue to evolve," says McGettrick. "We will be leapfrogging between FOT&E and FDE for the F/A-22 in the coming years as we develop specific tactics for global strike and conduct specific lest programs for tactics associated with new capabilities, such as the panoramic night vision goggles." The 422nd will conduct tests on every planned improvement before those improvements are fielded in the operational fleet.

"We are still writing the tactics and the tech orders, still getting new software," McGettrick continues. "Testing and evolving the F/A-22 is a monumental task for everyone involved from the contractor, to the officials associated with it, to the pilots, to the maintainers. But it's a labor of love. We've all seen what the F/A-22 can do. The airplane is ninety percent there. No major obstacles remain. We are here to make this fighter live up to its potential and to prove to our country's leadership and to US taxpayers that they have made a good investment. I have no doubt we will succeed."

First P-61 received: May 23, 1944
First enemy aircraft destroyed by P-61 crew: July 16, 1944 (V-l); Aug. 7, 1944 (manned enemy aircraft)
Squadron total enemy aircraft destroyed by P-61 crews: 43 manned; 5 V-ls

F-16 Pilot Identified in Fatal Nevada Crash: Capt. Eric Ziegler, 30, an operational test and evaluation instructor pilot with the 422nd Test and Evaluation Squadron at Nellis AFB, Nev., is the airman who died last week when his F-16C crashed in the desert near Caliente, Nev., during a training mission, announced Air Force officials. "Words can't express how much we'll miss Eric," said Lt. Col. Ryan Suttlemyre, 422nd TES commander in a Nellis release. "He was a special friend, a phenomenal husband and father, and a terrific aviator and officer. Our hearts go out to his family during this difficult time." A native of West Fargo, N.D., Ziegler graduated from the Air Force Academy in 2003. He was an experienced pilot with more than 1,200 flight hours, primarily in the F-16, including more than 300 flight hours in combat. Ziegler recently had been selected to attend the elite Air Force Weapons School at Nellis. 2011

On 20 December 2004, at 2340Z/1540 local time, the Mishap Aircraft (MA), F/A-22, Serial Number 00-4014, crashed on initial takeoff from Nellis AFB. The Mishap Pilot (MP), assigned to the 422nd Test and Evaluation Squadron, Nellis AFB, ejected safely and sustained only minor injuries. There were no other casualties. The MA impacted the Nellis AFB airfield and was destroyed. The only other damage was also to government property including an arresting cable, a runway sign, a runway light, and the runway surface. Immediately upon leaving the ground, the MA began a series of un-commanded and progressively more violent yaw, roll, and pitch transients. Unable to control the aircraft, the MP ejected seconds before the MA impacted the ground. The Accident Investigation Board President determined the cause of the mishap, supported by clear and convincing evidence, was an inoperative Flight Control System, resulting from a power interruption, which made the MA uncontrollable. The MP was unaware of this condition because he did not perform an Initiate Built in Test (IBIT), the only means of detecting the problem. Failure to perform the IBIT was the result of ambiguous Technical Orders and a mistaken belief in continuous RS A power availability. During the mishap sequence, the MP started engines, performed an IBIT, and had a fully functioning Flight Control System. Subsequently, the MP shut down engines to allow maintenance personnel to service the Stored Energy System. During engine shut down, the MA’s Auxiliary Power System (APU) was running. The MP believed the APU provided continuous power to the Flight Control System, and therefore another IBIT after engine restart was unnecessary. This belief was based on academic training, technical data system description, and was shared by most F/A-22

personnel. In fact, the MA's Flight Control System did experience a brief power interruption during the engine shut down sequence. The interruption produced an unforeseen catastrophic Flight Control System failure that rendered the MA un-flyable.

On 1 Nov 07 at approximately 1630 hours Pacific Daylight Time, at Nellis Air Force Base, NV, it was discovered that the #2 (right) engine of F-22A, S/N 00-4015, belonging to the 422d Test and Evaluation Squadron, 53d Test and Evaluation Group, 53d Wing, sustained foreign object damage while conducting a routine training mission. The mishap aircraft landed safely and caused no injuries to personnel or damage to other military or civilian property. An engine analysis performed after the accident revealed that the foreign object damage occurred when a 6 x 8 inch piece of Low Observable (LO) material separated from the right engine inlet and was ingested by the engine. LO materials are the aircraft surface coatings comprised of multiple layers (stack-ups) of fill and fairing compound, primer, paint and adhesives. The analysis further revealed that this event most likely occurred during the takeoff phase of flight. After a momentary performance dip, the right engine recovered and continued to perform throughout the remainder of the flight, with no observed reduction in performance. The mishap pilot noted the LO material missing from the inlet during his post-flight walk- around. The engine was borescoped and the jet was impounded. The engine was subsequently removed from the aircraft for teardown and analysis and impounded as well. Visible damage is extensive, affecting every stage of the compressor section and is estimated at $1,198,153.00. The Board President found that the cause of the mishap, shown by clear and convincing evidence, was an unrecognized delamination of LO material in the right inlet area within the layer of C493 fill and fairing material. This material liberated from the inlet during takeoff, inducing pieces of the first stage engine fan blades to break away, which in turn caused further damage throughout the engine. The use of C493 during production was a substantial contributing factor to the mishap. C493 is a fill and fairing material, used on F-22 A aircraft S/Ns 99-4011 through 02-4040, that was found to have poor cohesive strength. The deficiencies of this material were identified by the manufacturer and it was replaced by another material on subsequent aircraft, however all 30 of the affected aircraft remain in service. A second substantial contributing factor to the incident was a lack of sanctioned tools and clear technical order guidance available to maintenance personnel to quickly and precisely identify disbonded LO material within the inlet and intake areas. Over time, maintenance personnel have developed informal techniques in an attempt to overcome this shortfall.

On 17 March 2003, at 0844 local time (1644 Zulu), an F-15C assigned to the 422nd TES, 53rd WG, S/N 80-0030, impacted the ground after a mid-air collision with another F-15C in the flight (S/N 83-0040), and was destroyed on the Nellis Test and Training Range, Nevada. The F-15s, flying out of Nellis AFB, were part of an Air Combat Maneuvering (ACM) training mission. The pilot of the destroyed F-15 sustained minor, non life-threatening injuries received during his ejection and parachute landing. The second F-15 received moderate damage. The pilot of the second F-15 received no known injuries and returned back to Nellis AFB after assisting in search and rescue operations and landed uneventfully, discovering the damage to his aircraft after having it brought to his attention by ground personnel. The destroyed F-15 was valued at $31,015,194. The second F-15 sustained damage valued at $479,632. There was no injury to

civilians or damage to other property as a result of this accident. Shortly before ground impact, the two aircraft had been maneuvering as part of a fighting element against a “Bandit” (simulated red-air adversary) in a visual ACM engagement. The pilot of the destroyed F-15 had been designated the “supporting fighter” for this engagement. As such, one of his many responsibilities (the primary of which is flight path deconfliction) is to take “shots of opportunity” in an attempt to “kill” the Bandit. This mishap pilot had just taken such a shot, but then misjudged bis leader’s geometry and failed to deconflict, thinking his leader was “not in the way” as he continued to press the fight against the Bandit. Seconds later, he collided with his leader, who felt some minor “buffeting”, but did not realize he had been hit. The primary mishap aircraft went almost immediately into an uncontrollable spin. After several initial recovery attempts, the mishap pilot determined that he could not recover the aircraft and ejected at what he perceived to be his minimum controllable altitude. By clear and convincing evidence, I have determined that this mishap was caused by the failure of the mishap pilot to properly clear and deconflict his flight path with that of his leader prior to entering lead’s fighting airspace during their pre-briefed ACM engagement. The mishap pilot recognized the impending collision at the last moment and attempted to avoid the collision, but there was insufficient room and time for him to avoid striking his leader’s aircraft. The resulting impact put the destroyed aircraft into an uncontrollable left spin from which the mishap pilot could not recover. He ejected and the aircraft impacted the ground.

On 21 June 2000, at 1356 MDT (1956 Zulu), an F-I6 CG, S/N 87-0000357, call sign Window 2, crashed on the Cold Lake Air Weapons Range (CLAWR), Alberta, Canada. The F-16 CG, assigned to the 388th Fighter Wing (388 FW), 421st Fighter Squadron (421 FS), Hill Air Force Base (AFB), Utah, was part of the large force joint training exercise Maple Flag XXXIII (MF 33) hosted by 4 Wing Cold Lake from 15 May 00 through 23 June 00. The mishap pilot (MP), Captain Richard R. Pietrykowski, of the 388 FW, 421 FS, Hill AFB, Utah, was number two in a flight of three F-16 CGs, call sign "Widow 11” flight (mishap flight was originally a flight of four, however, Widow 13 ground aborted on takeoff roll). Shortly before the mishap, Widow 11 was targeted by a simulated surface- to-air missile (SAM) threat and performed a descending defensive maneuver. Widow 12 and 14 executed a similar defensive maneuver while maintaining visual contact with Widow 11. Widow 11 then continued his descent (below 5000 feet AGL) beneath an approaching cloud deck and directed Widow 12 and 14 to do the same. The flight leveled off at approximately 2,200 feet above the ground on an easterly heading at approximately 500 knots calibrated airspeed (KCAS). Approximately 25 seconds after level-off, at IS56Z, Widow 12’s aircraft struck a single mature American White Pelican (AWP) which penetrated the windscreen causing structural failure of the canopy and head-up-display (HUD). Debris from the canopy, HUD, and the AWP struck the MP causing confusion, disorientation and vision loss. The MP successfully ejected from the aircraft,Sustaining minor injuries. The mishap aircraft impacted in a lightly-forested muskeg flrea of the CLAWR and was completely destroyed. Based on clear and convincing evidence, this accident was caused by an AWP impacting and penetrating the canopy, thus, leading to Captain Pietrykowskis decision to eject.

On 8 August 2000, at 1643L, PDT (2343 Zulu), an F-16CG, S/N 88-0542 (mishap aircraft 2 (MA-2), call sign VIPER 4), crashed west of Mormon Peak, 19 miles north of Moapa, Nevada (N36“58’74/W114',317), after colliding with an F-16CJ, S/N 90-0809 (MA-1, call sign VTPER I). Both the F-16s were assigned to the 422nd Test and Evaluation Squadron, 53rd Wing, Nellis Air Force Base, Nevada. Both aircraft were part of a mission of four aircraft, supporting a test upgrade tactical intercept syllabus sortie for the number two aircraft. MA-1, which sustained damage to the left wing and pylon and minor damage to the rudder, was able to land. The pilot of MA-2 ejected safely, with minor injures. MA-2 impacted the northwest slopes of the Mormon Mountains without causing any civilian property damage or injuries. MAI and MA2 were flying in opposing two-ship elements. VIPER 1 (MA-1), leading VIPER 2 in the 422 TES upgrade program, was engaging VIPER 3 and VIPER 4 (MA-2, of the second element), in a visual identification scenario. The second element was simulating MIG-29 aircraft. The second element had radar locks on the first element, forcing VTPER 1 and VIPER 2 into defensive reactions. VTPER 1 then lost radar situational awareness on the second element. During the maneuvering, VIPER 2 lost sight of VIPER 1 and never regained visual contact. After defensive maneuvering, VIPER 1 (MA-1) turned in the direction of the opposing aircraft. He automatically locked VIPER 3 and flew pure pursuit geometry, resulting in a flight path conflict with VIPER 4. Meanwhile, VIPER 4 had gained a tally on VTPER 2 and was committing to a short-range engagement; however, he was unable to see VIPER 1 underneath his aircraft. VIPER l’s aircraft (MA-1) collided with VIPER 4’s aircraft (MA-2) with approximately 130 degrees of aspect. The left wing tip and pylon of MA-1 impacted the center portion of MA-2’s left wing and then the horizontal stabilizer, causing them to separate. MA-2 was uncontrollable and was destroyed on impact. There is clear and convincing evidence that this mishap was caused by VIPER 1 ’s failure to clear his flight path or stop the engagement, after entering his opponent’s pre-planned altitude block in violation of training rules. VIPER 1 did not have adequate situational awareness. Three factors substantially contributed to the mishap. First, VIPER I suffered from channelized attention. Second, VIPER 1 misinterpreted the situation leading to inadequate visual lookout and bad assumptions about his actual aircraft position. Third, the second element (VIPER 3 and 4) was complacent about exercising good communication.

Air Force Order of Battle
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Sources

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The Institute of Heraldry. U.S. Army. Fort Belvoir, VA.
Air Force News. Air Force Public Affairs Agency.