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HOLLOWAY AFB, NM
49th TFW

MICHAEL D. FARMER LT COL USAF
INVESTIGATION OFFICER

38 TFW
310 TFS

F-16C AIRCRAFT
S/N 88-0481

USAF PLANT 22 PALMDALE CALIFORNIA
1 DECEMBER 1990

BOARD
INVESTIGATION
ACCIDENT
USAF AIRCRAFT
AFR 110-14

DOCKETED
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OFFICE OF THE SECRETARY
RULEMAKINGS AND
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FEDERAL REGULATORY COMMISSION

Docket No. _____ Official Exh. No. 117
In the matter of PFS
Staff _____ IDENTIFIED /
Applicant ✓ RECEIVED /
Intervenor _____ REJECTED _____
Other _____ WITHDRAWN _____
DATE 7/1/02 Witness _____
Clerk [Signature]



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS TWELFTH AIR FORCE (TAC)
BERGSTROM AIR FORCE BASE TX 78743-5002

OFFICE OF THE COMMANDER

11 February 1991

SUBJECT Aircraft Accident Investigation: F-16C, SN 88-0461, 310
TFTS, 1 December 1990, Palmdale, California

TO JA

Subject aircraft accident investigation is approved.

A handwritten signature in cursive script, appearing to read "Watt".

WALTER T. WORTHINGTON
Major General, USAF
Commander

Readiness is our Profession

57083

AFR 110-14

AIRCRAFT ACCIDENT INVESTIGATION
FORMAL REPORT OF INVESTIGATION

1. AUTHORITY AND PURPOSE:

The Commander, Twelfth Air Force (TAC), appointed Lieutenant Colonel Michael D. Farmer, under Air Force Regulation 110-14, to investigate and determine facts and circumstances surrounding the aircraft accident involving F-16 aircraft, S/N 88-0461, which occurred on 1 December 1990 at Palmdale Air Force Plant 42, Palmdale, California (TAB Y-1). Captain Patrick J. Knowlton, 34th Tactical Fighter Squadron, Hill Air Force Base, Utah, provided operation technical advice (TAB Y-2); Captain Daniel J. Smith, 58th Component Repair Squadron, Luke Air Force Base, Arizona, provided maintenance and life support technical advice (TAB Y-3); and Major John C. Phillips, 311th Tactical Fighter Training Squadron, Luke Air Force Base, provided medical technical advice (TAB Y-4). The purpose of the investigation is to obtain and preserve available evidence for claims, litigation, disciplinary and administrative actions, and for all other purposes deemed appropriate by competent authority.

2. SUMMARY OF FACTS:

a. History of Flight:

Three F-16C aircraft, call sign Bonk 11, 12 and 13, took off from Luke AFB, Arizona, at 1706 Zulu (Z), on 1 December 1990. Although three aircraft departed Luke AFB, Arizona, they were initially part of a five-aircraft deployment to Miramar NAS, California. Maintenance problems on the ground, with Bonk 14 and Bonk 15, precluded two of the planned five aircraft from making the scheduled takeoff. At 1754Z, while proceeding on the planned route, Bonk 12 experienced an out-of-control situation and subsequently ejected from F-16C aircraft 88-0461. The aircraft crashed on the grounds of United States Air Force Plant 42, Palmdale, California, and was destroyed. The pilot of Bonk 12, Captain Craig Fisher, ejected successfully receiving a minor muscle strain. News releases were provided to the public by the 832nd Air Division, Public Affairs Office, Luke AFB, Arizona (TAB AA-1).

b. Mission: The mission was a continuation training, cross-country deployment sortie for instructor pilots of the 310 TFTS. The objective of the mission was to successfully deploy five aircraft to the destination for the purpose of conducting dissimilar air combat training sorties. Bonk 11 was flown by Lt Col Tom Booth. Bonk 12 was flown by Capt Craig Fisher. Bonk 13 was flown by Captain Richard Harris.

c. Preflight and Briefing:

(1) All flight members had adequate pilot rest for the mission. Captain Fisher was in the squadron for only a brief period the day prior. He left the squadron at 1115 Local (L) the day prior and returned at approximately 0740L the day of the accident (TAB V-4).

(2) Mission preparation for the sortie was thorough (TAB V-1, V-2, V-4). The flight lead and his number four wingman met and planned most of the mission the day prior, to include who would file the flight plan and check the weather and NOTAMS at Base Operations on the day of the deployment. The two met again on the morning of the flight just prior to briefing to finish the last portion of the planning (TAB V-1).

(3) The flight briefing started on time and was normal. Lt Col Booth briefed the mission using the normal 310th TFTS briefing guide located in Briefing Room One (TAB V-1). The briefing included all applicable items required by existing regulations, including emergency procedures and divert airfield data along their entire route of flight. All members of the flight clearly understood the objectives, the plan for the deployment mission, and had no questions at the conclusion of the briefing (TAB V-1, V-2, V-4).

d. Flight:

(1) Ground operations up to and including engine start for Bonk 11 flight were normal. After engine start, prior to taxi, Bonk 14 developed an engine problem. Bonk 14 was required to shutdown for a brief period of time. Bonk 11 made the decision to leave a two ship behind rather than delay the entire flight. The Squadron Commander also concurred with this decision (TAB V-1). Bonk 12 completed a normal engine start, and all appropriate checks were accomplished. All flight control checks and flight control movements were normal (TAB V-3, V-4). The remaining three members of Bonk flight checked in on the radio and used the normal taxi route to the end of the runway. The flight

received clearance for the route of flight as filed. The end of runway checks were accomplished in accordance with local directives (TAB V-1).

(2) Bonk flight was cleared for takeoff from Luke Tower at 1706Z. Bonk 11 and 12 accomplished a formation takeoff. Bonk 13 accomplished a single ship takeoff 20 seconds later (TAB V-1, V-4). Bonk flight completed the rejoin to route formation. They continued with the assigned departure and climbed without delay to the enroute cruise altitude of FL 280. During the departure phase, Bonk 11 was unable to acquire a TACAN lock-on. Bonk 12 helped Bonk 11 with the navigation until his TACAN began working (TAB V-1, V-4). During the remainder of the climb to altitude, the flight moved to a wider formation. Bonk 13 flew on the right side of the formation, with Bonk 12 on the left. Spacing for the "VIC" formation was plus or minus 100 feet in altitude and out to approximately 2,000 feet horizontally (TAB V-1, V-2, V-4).

(3) Enroute the flight remained level and accomplished all the normal fuel and navigation checks. Bonk 11 made comments on the VHF radio approaching the George AFB area about the snow in the mountains. Bonk 12 also commented that his parents lived near the area (TAB V-1, V-4). The flight continued along the route with no delays. Approximately 40 minutes into the flight, Captain Fisher determined he needed to urinate. He began to prepare the cockpit for use of the "piddle pack". He put the aircraft on autopilot by engaging altitude and heading hold (TAB V-4).

e. Impact:

(1) Approaching Palmdale, California, Captain Fisher safed the ejection seat. He removed a piddle pack from his G-suit pocket. He unlatched the lap belt and took off his gloves. He placed his gloves on the rails of the canopy, then unzipped his flight suit and began to raise himself up and forward in the ejection seat. He used his feet on the rudder pedals to help with this upward motion. During this up and forward motion, Captain Fisher felt a yaw or roll start to happen. He reclined back into the seat. The roll rapidly progressed into a very aggressive and rapid roll rate to the right. He immediately attempted to counter the rolling motion with left and aft stick pressure. Bonk 12 made a radio call stating "Bonk 12 is out of control" (TAB V-4).

(2) Captain Fisher neutralized the controls and let go of the stick with no change in aircraft response (TAB V-4). The aircraft entered a progressively nose-low-right rolling motion (TAB 0, V-4). Captain Fisher rearmed the ejection seat. He

depressed the paddle switch on the stick to remove all auto pilot inputs with no effect. He then placed the backup flight controls into digital backup (TAB V-4). The aircraft roll rate decreased, however he was unable to arrest the roll or regain control through stick inputs (TAB 0, V-4). He reselected the normal flight control position on the flight control panel, placed the throttle to idle, and extended the speed brakes (TAB V-4). At this point Bonk 13 stated on the radio, "check altitude" (TAB V-2). During this entire sequence beginning at 27,960 MSL, a constant force was applied to the stick. There was no change in force for 58 seconds. The force was neutralized at 4160 MSL (TAB 0). Noting he was passing 7500 MSL, Captain Fisher radioed "I'm getting out". He then initiated the ejection sequence (TAB V-4). After the pilot's successful ejection, the aircraft impacted the ground 432 ft north of the passenger terminal at United States Air Force Plant 42, Palmdale, California (TAB V-5, R-1). Crash site was located on U.S. Government facilities, with no damage to private property (TAB P-1).

f. Ejection: In Aircraft 88-0461, the ejection seat sequence was initiated within the performance envelope of the system. During the flight, the seat had been safed and subsequently rearmed. The ejection process was pilot initiated while the lap belt was unlatched, using both hands to grab the hand grip (TAB V-4). The right half of the lap belt was damaged during the ejection process (TAB J-4, S-4). Damage to the lap belt webbing occurred during the ejection phase of the escape episode. Although the lap belt was unlatched at the time of ejection, indications are that all egress and life support equipment functioned as designed (TAB J-4). After opening shock, Captain Fisher began a four-line jettison on the right risers. Captain Fisher then completed a normal parachute landing fall (PLF) (TAB V-4).

g. Personal and Survival Equipment: Captain Fisher's PLF was uneventful and subsequently he located his personal locator beacon (PLB), turned it off, removed the battery, and made contact with SAR aircraft by using his survival radio (TAB V-4). No difficulty was encountered with the use or function of any survival equipment. Also, all personal and survival equipment inspections were current. Throughout all phases of this investigation, no evidence was found of any equipment failures or maintenance discrepancies with the life support system (TAB J-4).

h. Rescue: Due to the location of the crash site, no search was required. Bonk 11 and 13 remained on station for five minutes. After radio contact was established with Capt Fisher, and no further assistance was required, the decision was made to continue to Miramar NAS, California (TAB V-1, V-2). The mishap pilot was initially met by AF Plant 42 civilians. The AF Plant 42 manager arrived on the site and coordinated for Capt Fisher to go in an Apple Valley ambulance to a local hospital. He was then transferred to Edwards AFB Hospital (TAB V-4).

i. Crash Response: Upon being notified of Aircraft 88-0461's impact, the AF Plant 42/Palmdale Airport responded to extinguish the fire. The 832 AD Command Post was notified and accomplished the appropriate checklists (TAB AA-2, AA-1). Col Jaszczak, Accident Safety Board President, arrived at Palmdale Airport on 2 December 1990 to convene the accident investigation (TAB Q).

j. Maintenance Documentation: A thorough review of all manual and automated aircraft maintenance records and forms on F-16C 88-0461 was performed. Records were found to be in good order (TAB AA-14). There were no overdue time compliance technical orders (TCTO) or time change items (TAB H-2, AA-14). The aircraft was accepted by the 58 TTW in December 1989 and had 178.8 total flying hours logged prior to the mishap sortie. Its first 150-hour phase inspection was completed on 5 Oct 90 at the 145.7 flying hour point. (TAB D-1, AA-7). The only significant action performed beyond the normal phase inspection maintenance was the removal and reinstallation of the gun for an annual inspection. The mishap flight was the aircraft's first sortie of the day. A basic post flight inspection had been accomplished on Aircraft 88-0461 on 28 November 1990, after the last flight previous to the mishap sortie. No discrepancies were found. A thorough preflight inspection was accomplished on Aircraft 88-0461 the morning of 1 December 1990. Again, no discrepancies were noted. The exceptional release was signed off by the AMU production superintendent (TAB AA-14). Capt Fisher accepted the aircraft and its forms in that condition (TAB V-4).

k. Maintenance Personnel and Supervision:

(1) Basic postflight and preflight inspections were correctly performed two days prior and the day of the accident for F-16C 88-0461 (TAB AA-3).

(2) Review of all training records and individual testimony (TAB V-3) revealed flightline personnel were properly trained and qualified for their tasks (TAB AA-15).

1. Engine, Fuel, Hydraulic and Oil Inspection Analysis:

(1) The engine intake inspection was correctly performed before the day of the accident. A review of engine records reveals no adverse trends or improper maintenance actions.

(2) The fuel test report data was normal (TAB AA-10).

(3) The hydraulic fluid test report data was normal (TAB AA-10).

(4) The engine oil test report data was normal (TAB AA-10).

(5) The liquid oxygen test report data was normal (TAB AA-10)

m. Airframe and Aircraft Systems: Although the mishap aircraft sustained severe damage and fragmentation, instrument teardown and analysis indicates there was no evidence of airframe, aircraft or engine system malfunctions prior to the crash (TAB J-1, 0-1).

n. Operations Personnel and Supervisions: This mission was authorized by Lt Col Tom Booth on DD Form 175, dated 1 December 90 (TAB G-2). Lt Col Booth gave the briefing using the normal 310th TFTS Room Number One, briefing guide. Squadron supervisory personnel were in the squadron, but were not present during the actual flight brief. This is normal. The mission was thoroughly and adequately briefed (TAB V-1).

o. Pilot Qualifications:

(1) Examination of pilot flight records revealed the mishap pilot was qualified and current in accordance with current regulations and directives to fly the mission (TAB T-1).

(2) Captain Fisher was an experienced instructor pilot with 1356.6 hours of flight time, 249.5 of those in the F-16C. Captain Fisher's formal training courses were normal. He was proficient in all 310th TFTS missions and had flown regularly

during the last 30,60, and 90-day periods. His instrument/aircraft qualification was valid through March 1992. His instructor qualification was valid through February 1991 (TAB T-1, G-3).

(3) The flying experience for Captain Fisher is as follows:

Total Time	F-16C/D	F-16A/B	IP	30/60/90
1356.6	249.5	1076.9	282.1	20.6/28.0/41.2

p. Medical:

(1) The pilot was medically qualified for the flight at the time of the accident. The toxicological report on Captain Fisher was negative (TAB X-0).

(2) Captain Fisher suffered a minor muscle strain to the neck area. He was observed for three hours at the Edwards AFB Hospital and then released with no complications (TAB X-0).

(3) A comprehensive review of his medical records reveals Captain Fisher to be in good health. He is on an indefinite waiver from HQ USAF for substandard visual acuity and refractive error (TAB X-0).

q. Navigational Aids and Facilities: Navigational aids and facilities were operational during the mission (TAB AA-16).

r. Weather:

(1) Weather was not a factor in this accident. Weather observations from Luke AFB and the crash site were as follows (TAB K):

(a) Luke AFB (1700Z) - Skies were clear, visibility 20 plus, freezing level at approximately 11,500 ft (MSL), and winds were calm.

(b) Palmdale Air Force Plant 42 (1700Z to 1900Z) - Skies were clear, visibility was 35 miles, freezing level at 11,500 ft (MSL), and winds were calm.

(2) Weather warnings and advisories:

(a) Luke AFB - None

(b) Palmdale Air Force Plant 42 - None

s. Directives and Publications:

(1) The following publications were applicable to the mission:

AFR 60-1	Flight Management
AFR 60-16	General Flight Rules
TACR 51-50	Flying Training- Tactical Fighter
TACR 51-50, Vol 6	F-16 Aircrew Training
TACR 55-116	F-16 Aircrew Operational Procedures
TACR 60-2	Aircrew Standardization/Evaluation Procedures
T.O. 1F-16CG-1	Flight Manual F-16C/D, Blocks 40 and 42

(2) There were no known deviations from the directives or publications by the pilot or others involved in the mission.

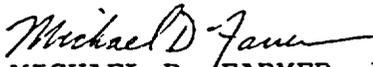
Michael D. Farmer

MICHAEL D. FARMER, Lt Col, USAF
Investigating Officer

MEMO FOR RECORD

SUBJECT: Disposition of Original Items

1. TABS A - S: All documents provided by the Safety Investigation Board were determined to be true copies of original documents provided to the 12th Air Force Staff Judge Advocate office. Attempts were made to obtain the originals by contacting the Safety Board president. He was unavailable at the conclusion of the AF 110-14 board because of duty in the Persian Gulf.
2. TAB T: Individual Flight Records. Originals maintained in 310 TFTS, Luke AFB, AZ
3. TAB X: Statements of Inquiry or Death. Originals maintained in medical records at 832 AD Hospital, Luke AFB, AZ
4. TAB AA: Public Affairs News Release, 832 AD Command Post Log and 310th TFTS Aircraft Pilot Reported Discrepancy Log maintained by originating offices.


MICHAEL D. FARMER, Lt Col, USAF
Investigating Officer