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AIRCRAFT ACCIDENT INVESTIGATION REPORT

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RULEMAKINGS AND
ADJUDICATIONS STAFF

**AIRCRAFT ACCIDENT INVOLVING
F-16/A SERIAL NUMBER 78-0009
F-16/A SERIAL NUMBER 80-0536**

DEPARTMENT OF DEFENSE

Docket No. _____ Official Exh. No. 120
 in the matter of PFS
 Staff _____ IDENTIFIED _____
 Applicant RECEIVED _____
 Intervenor _____ REJECTED _____
 Other _____ WITHDRAWN _____
 DATE 7/1/02 Witness Pilot - Major Cary L. Carlin (009)
 Clerk _____ Witness Pilot - [REDACTED] (536)

**184TH TACTICAL FIGHTER GROUP
KANSAS AIR NATIONAL GUARD**

24 JANUARY 1991

**Submitted By:
Richard S. Kenney
Colonel, VTANG
Investigating Officer**

PFS Exh. 120

SECY-02

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SUMMARY OF FACTS

A. HISTORY OF FLIGHT:

Devil 31 flight, two F-16A aircraft, Devil 31 lead and Devil 32 wing, was scheduled for a 0900 CST takeoff on 24 January 1991. The flight was a Continuation Training (CT) mission for both pilots, and was scheduled to perform the training within the Eureka Military Operating Area (MOA). The flight was a local training sortie scheduled for 1.1 hours duration with recovery back at McConnell. Devil 31 flight departed McConnell AFB at 0858 CST on 24 Jan 91, and at approximately 0931 CST collided in mid-air and impacted the ground in the western portion of the Eureka MOA, 40 nautical miles East Northeast of McConnell AFB, Kansas; both aircraft were destroyed.

Information about the mishap was released through the Public Information/Relations Director, Adjutant General's Department, Kansas National Guard, on 24 Jan 91. Both television and print media from the Wichita area were at the crash site by the afternoon of 24 Jan.

B. MISSION:

The mission of Devil 31 flight was to accomplish Continuation Training (CT) events to maintain proficiency and currency in flying training requirements. Mission profile included a one versus one (1V1) intercept, and five Basic Fighter Maneuver (BFM) engagements. The five BFM engagements included two 8,000 and two 9,000 feet separation set-ups (alternating offensive and defensive roles), and one high aspect neutral set-up. This

mission was not an instructional ride, and therefore is not included in any established training syllabus. Mission scenario and training objectives are established by the flight lead.

C. BRIEFING AND PREFLIGHT:

The briefing on Thursday morning, 24 Jan, was conducted by Major Carlin as designated flight lead, Devil 31; [REDACTED] was wingman, Devil 32. [REDACTED] stated in testimony that it was a normal briefing, that all aspects were covered, and that the briefing included a discussion of the training rules (TR, or Rules of Engagement), to include the restriction to coming no closer than 500 feet to the other aircraft. A simulated ground kill floor for the working area was briefed as 6,500 feet MSL. All other briefing items were completed normally while referencing the approved briefing guides.

The briefing covered six separate set-ups, all pilot controlled. Major Carlin described the desired objectives for an intercept phase and a BFM phase in regards to missile and gun shots. The first set-up was to be a head on intercept (beyond visual range) to a merged engagement. The next four set-ups were to be two 6,000 feet and two 9,000 feet BFM engagements (visual). Major Carlin was to be defensive on the first 6,000 feet engagement, [REDACTED] offensive; they would alternate these roles for the next three engagements. The sixth and last set-up was a high-aspect visual engagement with both fighters approaching nearly head on with neutral advantage. A rejoin and formation recovery to McConnell was planned. Indications from testimony are that the pre-mission briefing was thorough and covered all requirements and objectives. Testimony from [REDACTED] indicated all ground operations were also standard and normal.

D. FLIGHT ACTIVITY:

Devil 31 flight, scheduled for an 0900L takeoff, departed McConnell at 0858L. Operations were normal through a wing formation takeoff and departure to the Eureka MOA. Activities included weapons system checks, G awareness warm-up turns and normal radio check in with Kansas City Air Route Traffic Control Center. The flight was cleared to operate in Eureka from 2500 feet up to 31,000 feet (FL 310), and to change to a discrete frequency to conduct the training.

Devil 31 flight separated to set up for the intercept and establish their briefed block altitudes. The engagement was terminated as neither fighter could adequately acquire the other on radar to successfully engage; they passed without any shots being called and rejoined for the visual BFM.

The first BFM engagement at 6,000 feet with Devil 31 defensive, resulted in three gun snap-shots by #2 ending the fight. The second, also at 6,000 feet but with Devil 32 now defensive, was not recorded; Devil 32 could not recall any shots being called.

The third BFM engagement was at 9,000 feet separation with Devil 31 defensive; it was terminated in less than a minute when #2 recorded a tracking guns shot.

The fourth engagement, again at 9,000 feet separation with Devil 32 defensive, did not have any shots called; however, evidence indicates probably two role reversals, and after more than three minutes, Devil 31 had to call "Knock It Off" after encountering a low speed warning horn. [REDACTED] testified that there was nothing unusual about the first four engagements, and that all training rules were followed.

Devil 31 flight then maneuvered to set up the high aspect, neutral engagement. Testimony from [REDACTED] indicated early confusion on how Major Carlin directed the setup. After positioning was established, they turned towards each other at "Fight's On" for the final engagement. Testimony indicates no clear advantage being obtained by either fighter, and no shots called for approximately two and one half minutes. Approximately ten to fifteen seconds prior to the collision, #2 testified that [REDACTED] was having difficulty determining what maneuvering was being done by #1, and in what direction #1 aircraft was moving. Comprehension was being complicated by a background of sun and sky as he watched #1. Devil 32 states that he was momentarily confused about the flight geometry at this time. Within seconds, however, [REDACTED] realized both aircraft were approaching each other, and that collision was imminent. The aircraft did collide with the pitot boom and cockpit area of Devil 31 passing through the left horizontal stabilizer of #2. [REDACTED] last recollection was that the aircraft were "belly to belly". The aircraft did collide underside to underside, with #1 approaching from above in an approximately 80 degree nose down attitude. (TAB J)

[REDACTED] states that after the impact, [REDACTED] perceived [REDACTED] aircraft to be in a flat spin. Not realizing the extent of the structural damage, [REDACTED] attempted to recover the jet. When [REDACTED] inputs did not get a response, [REDACTED] checked [REDACTED] altitude, made a "Mayday" radio transmission, and initiated a normal, sequenced ejection. Time from impact to ejection was approximately 25 seconds.

During the course of the mission, the engagements had been traversing between approximately 10,000ft MSL and 25,000ft MSL. The mid-air collision occurred at 13,700ft MSL, 12,500ft AGL. The flight had been airborne approximately 33 minutes.

Testimony indicated that aircraft performance and flight operations up to the last engagement were normal and as expected. There were not any minimum closure range violations and all training rules were followed. On the mishap engagement, [REDACTED] believes that #1 probably did not have visual contact, or reacquired a visual too late to avoid the collision.

Weather in Eureka MOA during the mission was VMC, and the entire mission was flown VFR. [REDACTED] described a very thin cloud layer around 4,000 feet that did not obscure the ground, but was of tactical advantage for a fighter looking down on a bandit.

Air to air employment training rules (ROE) prohibit any aircraft from coming any closer than 500 feet to another aircraft while performing this type of training.

E. IMPACT:

The mishap aircraft (F-16A, 78-0009; F-16A, 80-0536) impacted the ground 40 miles East Northeast of McConnell AFB, in Greenwood County, East of Beaumont, Kansas (N 3739.5/W 9625.5) at 0931 CST, 24 January 1991.

F. EJECTION SEATS:

The ejection seat system of mishap aircraft number two (80-0536) operated successfully in Mode 1 after pilot activation. The ejection seat of mishap aircraft number one (78-0009) was destroyed during cockpit impact at the time of the collision. Mishap pilot number one could not initiate the ejection sequence; however some system components were initiated by the impact resulting in pilot extraction.

G. PERSONAL AND SURVIVAL EQUIPMENT:

All applicable inspections were current and all equipment for Devil 32 functioned properly. Testimony revealed limited use of available equipment due to rapid response; the pilot used only the emergency radio. Devil 31 equipment was not exercised due to impact fatality.

H. RESCUE AND CRASH RESPONSE:

The time of the mishap was 0931 CST. At 0932 CST Kansas City Center received notification from McAllister Radio that they had just heard a Mayday call on 243.0 (UHF Guard), and that a pilot had stated he was going to have to eject. Attempts to confirm an ejection were unsuccessful.

The Control Tower at McConnell AFB heard the Mayday transmission given by mishap pilot number two.

Several agencies were contacted in an attempt to confirm an ejection had taken place. Though unable to positively confirm an ejection, Tower decided to activate the Crash Net at 0946CST. Security Police, Disaster Response, and Flight Medicine from the 384 BMW responded to the scene. Security arrived at the crash site at 1035, Primary Response at 1100, and Flight Medicine at 1300. Security immediately secured the area and established an Entry Control Point. Flight Medicine transported Major Carlin's body back to the McConnell AFB Hospital. Small ground fires at each crash site quickly self-extinguished.

Major Harrison was met almost immediately by a local resident who took him to a nearby home where he placed a telephone call to the unit. Arrangements were made for the 177 TFGS Operations Officer to drive to the site and take Major Harrison back to McConnell. While waiting for the pickup, Major Harrison went back to the site with the Greenwood County Sheriff to search for Major Carlin who had not been located.

Smokey 51, an airborne F-16 from the 184 TFG was diverted to the scene to act as SARCAP. He was later relieved by Jayhawk 10, a C-12 launched from McConnell. The C-12 directed ground searchers to the area where Major Carlin's parachute was located. Major Harrison used his emergency radio to communicate with both CAP aircraft. When the searchers arrived at Major Carlin's landing site, it was determined he was a fatality.

I. MAINTENANCE DOCUMENTATION:

A review of the mishap aircraft AFTO Forms 781 series and associated maintenance records did not reveal any discrepancies related to the mishap. There were not any negative trends or problem areas, and both aircraft were properly certified for flight. There were not any maintenance procedures or practices related to this accident.

J. FUEL, HYDRAULIC, AND OIL INSPECTION ANALYSIS:

All inspection analyses were found normal or satisfactory.

K. AIRFRAME AND AIRCRAFT SYSTEMS:

Both aircraft were destroyed by impact and fire. Inspections and analyses possible did not reveal any malfunctions up to the time of impact. Both aircraft were fully operational up to the collision.

L. OPERATIONS PERSONNEL AND SUPERVISION:

The mishap flight was conducted under the authority of the 184 TFG Commander, in accordance with AFR 60-1. The daily flying schedule for this flight was approved by the Commanders' delegated representative, the 177 TFG Operations Officer. Before approval it is reviewed for compliance with crew rest requirements, pilot qualifications, turn times, mission/syllabus requirements, working area deconfliction, and any other operations factors impacting effective mission accomplishment. Both pilots were current in all administrative requirements for flight. The briefing guide used by flight lead is approved and published by the 184 TFG Standardization/Evaluation Section.

M. PILOT QUALIFICATIONS:

Mishap pilot number two, [REDACTED] is an F-16 instructor pilot with 2286.3 total hours at the time of the mishap. [REDACTED] has 1055.3 instructor hours, 414 F-16 instructor hours, and 631.2 total F-16 hours. Other aircraft flown include the F-4C/D/E, T-38A/B, and OA-37 (TAB G). [REDACTED] F-16 initial qualification check ride was graded Qualified with one flight discrepancy in the Precision Approach area. The instructor upgrade check ride and all subsequent check rides have been Qualified with no discrepancies. [REDACTED] flying summary for 30 days prior to the mishap was normal and equivalent to [REDACTED] peers. No upgrade grade sheets were available for [REDACTED].

Mishap pilot number one, Major Carlin, was an F-16 instructor pilot with 2096.2 total hours; he had 508.2 instructor hours, with 32.5 of that in the F-16. His total F-16 time was 131.8. Other aircraft flown include the F-4D/E, T38A, and OV-10A (TAB G). Major Carlin entered F-16 conversion training on 25 May 1990; he completed initial qualification on 13 July 1990 with a Qualified check ride. Major Carlin demonstrated deficiencies during initial qualification that were documented on the phase grade sheets, 184 TFG Form 5. Deficiencies were noted in the Basic Fighter Maneuver (BFM) phase, and involved energy management, use of vertical maneuvering, and situational

awareness, often resulting in activating the low speed warning horn. He repeated BFM 3 ride due to lack of proficiency (TAB G). Major Carlin entered instructor upgrade on 17 July 1990, and completed a Qualified check ride on 9 Aug 1990, with discrepancies in Briefing and Tactical Navigation. On at least one occasion during upgrade, grade sheet documentation reflected non-proficiency in BFM. Major Carlin had flown only one sortie and 1.3 hours from 2 Dec 90 through 11 Jan 91, primarily due to 10 days of medical grounding and two weeks leave. From 2 Dec 90 through 23 Jan 91, he had flown 8 sorties and 13.6 hours. Three of these sorties and 6.8 hours were cross country flights, five hours in the back seat of an F-16B. None of the remaining five sorties were instructional, and all were flown as wing (number two), except one as second element lead.

N. MEDICAL:

Both members of the mishap flight were medically qualified for the flight at the time of the mishap. Major Carlin was a fatality as a result of the midair collision impact. A post accident examination of [REDACTED] at McConnell AFB Hospital did not reveal any injuries.

Toxicological analyses were conducted for both pilots by the Air Force Institute of Pathology, Washington, D.C.; all tests were negative.

O. NAVIGATIONAL AIDS AND FACILITIES:

There are not any navigational aids or facilities that may have contributed to this mishap.

P. WEATHER:

The reported weather at McConnell AFB at takeoff was 10,000 feet scattered clouds, visibility 7 miles, altimeter setting 30.28, and light winds from the North. Forecast weather was 10,000 feet scattered, 25,000 feet scattered, 7 miles visibility and light Northwest winds. Flight level winds at 15,000 feet were West Northwest at approximately 30 knots. The weather at the time of the mishap was Visual Meteorological Conditions (VMC) and the BFM mission was conducted under Visual Flight Rules (VFR).

Q. DIRECTIVES AND PUBLICATIONS:

Publications applicable to the operation of the mission are:

AFR 60-1
AFR 60-16
F-16A-1
TACM 51-50
TACR 55-116
TACR 55-79

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