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OFFICE OF THE SECRETARY
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ADJUDICATIONS STAFF

AFR 110-14

AIRCRAFT ACCIDENT INVESTIGATION

F-16A S/N 80-0610

I. AUTHORITY AND PURPOSE

At the direction of the Adjutant General, Montana National Guard, and AFR 110-14, an investigation of an aircraft accident involving F-16A, S/N 80-0610, was conducted at the 120th FGp, MTANG, Great Falls, Montana. (Tab Y) The accident investigation board was comprised of:

Board President:	Colonel Bruce G. Bramlette
Board Member:	Colonel Gary L. Hindoien
Board Member:	Lt. Colonel Gary R. Baarson
Legal Advisor:	Major James M. Taflan

The investigation was conducted to determine the facts and circumstances surrounding the crash of a 120th FGp F-16A that occurred at approximately 1607 MDT on 5 May 1992 at Great Falls International Airport, Great Falls, Montana.

II. SUMMARY OF FACTS

A. HISTORY OF FLIGHT

The mishap aircraft, F-16ADF, SN 80-0610 (call sign: Bullet 02) was the number two aircraft on an intercept and air refueling mission. The mishap aircraft took off as the wingman in close formation at 1438 MDT on 5 May 1992 from Great Falls International Airport, Great Falls, Montana and proceeded to the Bearpaw Air Traffic Control Assigned Airspace and the Hays Military Operations Area. The mishap aircraft conducted intercepts, radar missile defense maneuvers and air refueling under Bigfoot Control (Northwest Sector Operations and Control).

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PFS Exh. 138

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SECY-02

FEDERAL REGULATORY COMMISSION

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Upon reaching the pre-briefed fuel needed to terminate an event and proceed with the remainder of the mission, flight lead initiated a rejoin for his flight. During the rejoin, the mishap pilot perceived a problem controlling the engine thrust. The mishap pilot conferred with the flight lead and with the Supervisor of Flying, Captain Little. He then placed the engine fuel control switch in backup fuel control and regained control of the engine thrust. An emergency was declared and the mishap aircraft returned to Great Falls International Airport, MT, for landing.

At 1607 MDT, during the landing roll, the pilot was unable to control and stop the aircraft on the remaining runway and successfully ejected, sustaining minor injuries. The mishap aircraft departed the runway to the right, crossed a gravel road, caught a wing, rolled inverted and stopped in an open field. A fire occurred, but was extinguished by the fire department. (Tab A, V-Morrison Statement)

The accident received extensive media coverage.

B. MISSION

The mission was to conduct intercepts against a B-52 bomber, practice radar missile defense maneuvers and conduct in-flight refueling with a KC-135 tanker. The mishap pilot was Major Charles Morrison and the flight lead was Captain Vince Bakke. The duty status of the mishap pilot was an AFTP (additional flying training period) and Captain Bakke was on active duty. During the radar missile defense portion of the mission, both pilots flew offensive and defensive roles. The mission purpose was continuation training to maintain proficiency in the F-16 aircraft. (Tab V-Morrison and Bakke Statements)

C. BRIEFING AND PRE-FLIGHT

The mission briefing was accomplished by Captain Bakke, the flight lead. The briefing was comprehensive and all inclusive. Takeoff data was put on the mission data card, weather was discussed, and the sequence of events, INS points (Inertial Navigation System), coordinate points, SPINS (special instructions) and rules of engagement were covered. Both pilots were within crewrest requirements. (Tab V - Morrison and Bakke Statements) Aircraft 80-0610 flew one mission on 5 May 1992 prior to the mishap flight. The aircraft received a pre-flight in accordance with the F-16-6 Work Card-1, and all systems were found to be operational. (Tab H, Tab V-Gallagher Statement) The aircraft also received a thorough post-flight inspection after the first mission. The

aircraft returned from the first mission with no discrepancies (Tab H). The mishap pilot noted no discrepancies during his pre-flight inspection (Tab V - Morrison Statement). The crew chief that accomplished the pre-flight and post-flight inspections and launched the aircraft on the mishap mission was SSGT John Gallagher. The cursory crew also found no discrepancies during their inspection. (Tab V - Gallagher, Peterson and Bucklin Statements)

D. FLIGHT ACTIVITY

On 5 May 1992 the mishap pilot filed a local flight clearance with the Command Post with a clearance to the Bearpaw Air Traffic Control Assigned Airspace and Hays Military Operations Area. The assigned airspace was between 20,000 feet and 24,000 feet. (Tab K) Scheduled take-off time was 1440 MDT and actual takeoff time was 1438 MDT. The flight took off with Federal Aviation Administration departure control and was sent to Salt Lake Center prior to being sent to Bigfoot (Northwest Sector Command and Control) prior to entering the working airspace. There was no significant weather throughout the entire flight and the pilots were operating under visual meteorological conditions. (Tab K-4)

The first event in the airspace was an in-flight refueling with a KC-135 tanker on Air Refueling Track-604. The tanker's call sign was Duck 77 and the ARCT (Air Refueling Contact Time) was scheduled for 1500 MDT. Following the refueling, the flight ran two radar missile defense passes with the mishap pilot as the shooter on both passes. Next, three or four intercepts from individual CAP's (Combat Air Patrol) were flown against a B-52 bomber (call sign CZAR 66). (Tab V - Morrison and Bakke Statements)

Upon reaching the pre-briefed fuel level needed to terminate the event and proceed with the remainder of the mission and calling it to flight lead, the mishap pilot was instructed to join with Bullet One. Upon initiating a rejoin, the mishap pilot noticed the flight lead was falling back and noted that his (the mishap pilot's) fuel flow was 6,000 pounds per hour which he recognized as excessively high for an idle throttle position at 8,000 feet. (Tab V - Bakke Statement) The mishap pilot notified flight lead that he had a problem with a stuck throttle (the throttle moved completely fore and aft with no corresponding change in thrust or fuel flow and nozzle changes). The mishap pilot next made a call to flight lead stating that he had an electronic engine control problem. The mishap pilot then selected RANGE on the FCNP (flight computer navigation program) to see how much fuel he would have on arrival at Great Falls. The FCNP showed him arriving at Great Falls with 500 pounds of fuel remaining. He then proceeded to climb to 35,000 feet to conserve fuel, and referred to the electronic engine control malfunction page in the pilots checklist.

Eventually the mishap pilot referred to the Abnormal Engine Response page in the checklist. After conferring with the Supervisor of Flying, Captain Little, and the flight lead, the mishap pilot selected backup fuel control when he was within gliding distance of the runway and regained control of engine thrust. He flew a wide, very long downwind and entered a straight-in approach. It was a shallower than normal approach and the mishap pilot landed approximately 1500 feet from the approach end of the runway. (Tab V - Morrison Statement)

Upon touchdown, the mishap pilot applied normal aero-braking and noted that the speed initially decreased and then stabilized at about 120 KIAS (Knots Indicated Air Speed). He lowered the nose of the mishap aircraft and applied the brakes. The pilot saw the arresting cable ahead of him and elected not to extend the tailhook and engage the arresting gear. (Tab V - Morrison Statement) The mishap pilot noted the nozzles were fully closed and cycled the electronic engine control/backup fuel control switch to electronic engine control. (Tab V - Morrison Statement). The engine immediately accelerated and the mishap pilot re-selected backup fuel control and advanced the power with no effect. He then cycled the electronic engine control/backup fuel control switch all the way to electronic engine control and back to backup fuel control and moved the throttle to idle, with no effect. He next applied the right brake to avoid the lights and stanchions ahead of him, made one quick attempt to shut the engine off and ejected. (Tab V - Morrison Statement)

E. IMPACT

The aircraft departed the runway, crossed a gravel road, sheered off the landing gear, cartwheeled and came to rest, inverted, 1700 feet from the departure end of the runway. (Tab R)

F. EJECTION SEATS

The mishap pilot ejected at ground level. The ejection was successful and was conducted within the performance envelope of the system. (Tab V - Morrison Statement)

G. PERSONAL AND SURVIVAL EQUIPMENT

The personal and survival equipment inspections were reviewed and found to be current. The mishap pilot had a normal ejection and did not acknowledge any difficulties with his personal equipment. (Tab V - Morrison Statement)

H. RESCUE AND CRASH RESPONSE

The mishap pilot contacted the command post at 1556 MDT and asked for the SOF (Supervisor Of Flying). The command post controller initiated the emergency net. The crash alarm sounded at 1557 MDT in the fire station at Great Falls International Airport. Five fire trucks were dispatched. The crash occurred at 1607 MDT.

On the runway, a crash-fire technician in one of the fire trucks briefly conversed with the mishap pilot to see if he was injured. The other fire trucks continued following the mishap aircraft to the end of the runway, drove through a perimeter barbed wire fence, over a graveled, county road and proceeded to extinguish the resulting fire.

The mishap pilot was transported to Malmstrom AFB by ambulance. The mishap pilot was administered a post accident evaluation by a USAF Flight Surgeon and subsequently released to the Director of Operations, Montana Air National Guard. (Tab V - Zanto, Knowles, Boule, Spurlock, Morrison Statements)

I. MAINTENANCE DOCUMENTATION

A review of all maintenance records for the aircraft and systems revealed no discrepancies or deficiencies relevant to the unified fuel control. (Tabs H,U)

All calendar and hourly inspections were current with the exception of a mechanical strain recorder cassette due a time change at 2317.3 hours.

All proper maintenance procedures were followed prior to flight on 5 May 1992. No discrepancies were found. (Tab V - Gallagher, Morrison, Bucklin, Peterson Statements)

J. MAINTENANCE PERSONNEL AND SUPERVISION

Training records for maintenance personnel were well maintained and properly documented. All maintenance personnel involved were task qualified. (Tab U)

K. FUEL, HYDRAULIC AND OIL INSPECTION DATA

A review of engine records revealed no irregularities. All analysis of fuel, liquid oxygen, oil, and hydraulic fluids samples were normal. (Tab J)

L. AIRCRAFT SYSTEMS

A review of the aircraft engine was completed by the San Antonio Air Logistic Center Depot (SA-ALC), San Antonio, Texas. (Tabs I;J) Several engine control components and accessories were shipped through SA-ALC to Pratt & Whitney, West Palm Beach, Florida for testing and evaluation. (Tab I) The Pratt & Whitney findings are included in the SA-ALC report at tab J.

The determinations as reported by SA-ALC were as follows:

a. An extraneous Aj flapper in the Unified Fuel Control (UFC) lodged under the Power Level Angle (PLA) boost servo rack and prevented the engine from decelerating below approximately 87½ Revolutions Per Minute (RPM).

b. The transfer to backup fuel control mode was successful.

c. As the aircraft departed the runway, the engine was operating in primary mode, electronic engine control off. Throttle request was at approximately idle and the engine was operating near 87½ RPM.

d. With the exception of the Aj flapper, no anomalies to the engine were noted other than those generated by impact or ingestion of debris as the aircraft crossed the field and flipped over. (Tab J)

M. OPERATIONS PERSONNEL AND SUPERVISION

The mission was conducted under the authority of National Guard Regulation (AF) 51-50 (VOL XVII) to meet the requirements of AFR 60-1. The authorizing activity was the 120th FG. The supervisor of flying was Captain Little, who is a Group Flying Training Instructor and Scheduling Officer. The flight was commanded by Captain Bakke.

The pre-flight briefing was conducted by Captain Bakke. The supervisor of flying did not attend the briefing, which is normal for the Group.

N. CREW QUALIFICATION

The mishap pilot was a qualified F-16 pilot who was mission ready and qualified to fly this sortie. His flying experience is as follows:

<u>TOTAL</u>	<u>F-16</u>	<u>F-106</u>	<u>F-4</u>	<u>Q-2</u>	<u>T-33</u>	<u>T-38</u>	<u>INSTRUCT</u>	<u>STUDENT</u>
3311.9	640.4	776.7	394.2	678.3	190.8	18.8	403.6	209.1

PREVIOUS

30/ 60/ 90 DAYS
10.1/20.6/26.2 HOURS

(Tabs G, T)

O. MEDICAL

The mishap pilot did not have a current Air Force Form 1042 (Medical Recommendation For Flying or Special Operational Duty) at the time of the accident. The post-accident toxicological report produced negative results. The post-accident medical examination revealed no significant injuries. The mishap pilot has not been medically returned to flight status as of the date of this report. (Tabs X; V - Morrison Statement)

P. NAVAIDS AND FACILITIES

The mishap aircraft crashed at Great Falls International Airport, Great Falls, MT. There were no NOTAMS (Notice To Airmen) for Great Falls International Airport on the day of the mishap. (Tab V - Terry Statement)

Q. WEATHER

The weather at the time of the accident was 25,000 feet scattered with 40 miles visibility, winds 240 degrees at 7 miles, 84 degrees farenheit. (Tab W)

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R. DIRECTIVES AND PUBLICATIONS

The following directives and publications were applicable to the mission:

AFR 60-15 (Aircraft Cockpit and Formation Flight Signals)
AFR 60-1/TAC Sup.1 (Flight Management)
AFR 60-16 (General Flight Rules)
TACM 51-50, Vol. 1 (F-16 Aircrew Training)
ANGM 51-50, Vol. 1 (F-16 Aircrew Training)
TACR 55-116 (F-16 Pilot Operational Procedures)
TACR 55-116, Group Sup. 1, Chapter 8 (Pilot Operational Procedures/Local Area Operations)
JR 55-79 (Aircrew/Weapons Controller procedures for Air Operations)
NR 55-6(c) (Rules of Engagement)
T.O. IF-16A-1 (Flight Manual)

Bruce G. Bramlette

Colonel Bruce G. Bramlette
MT ANG Investigation Board President