RAS 5264 72-22-ISFSI — Applicant Exhibit 80 - Rec'd 4/12/02

AIRCRAFT ACCIDENT INVESTIGATION

AUTHORITY: Under the provisions of Air Force Regulation (AFR) 110-14, the Ninth Air Force Commander appointed Lieutenant Colonel Edward S. Cole to conduct an Aircraft Accident Investigation of the F-16A (SN 81-0798) accident which occurred 27 nautical miles northeast of Moody AFB (1.8 miles north of Pearson, Georgia) on 25 May 1990. The investigation was conducted from 20 June 1990 to 20 July 1990. Technical advisors were Major Rolf C. Soderberg (Operations), Major George E. Montroy (Maintenance), Major Gilbert L. Rogers (Flight Surgeon), Major James R. Muncaster and Capt John H. Kongable (Legal), and SSgt Alonzo Farley (Administrative Support) (Tabs Y-1 thru Y-7).

PURPOSE: An aircraft investigation is convened under AFR 110-14 to collect and preserve all relevant evidence for possible use in claims, litigation, disciplinary actions, adverse administrative proceedings, or for any other purposes deemed appropriate by competent authority. The investigation is conducted to obtain factual information and is not intended to determine the cause of the accident. In addition, the aircraft accident investigation board cannot draw conclusions or make recommendations. This report is available for public dissemination under the Freedom of Information Act (5 U.S.C. 552) and AFR 12-30.

SUMMARY OF FACTS

1. History of Flight: On 25 May 1990, Major Archie E. Stuart, an F-16 pilot at Moody Air Force Base, Georgia, was scheduled as number three (element lead) for a four-ship low-level training mission in the military low-level training route, VR 1001, terminating with a scheduled gunnery mission on Lake George Range, Florida (R2907), then recovering at Moody AFB for landing. Before the morning flight briefing, the schedule was changed and Major Stuart was rescheduled to lead a two-ship on a similar mission with the call sign, Otto 23. His wingman, Otto 24, was Captain Timothy H. Parmer (Tab K-2). The scheduled takeoff time was 0930 Eastern Daylight Time (EDT). The flight departed Moody AFB at 0940 EDT. After takeoff, the flight climbed to 6000 feet under Valdosta Departure Control's radar service and turned left through Moody Military Operating Area Two (MOA 2) to enter the low-level training route (Tab N-1). The flight cancelled its instrument flight rules (IFR) clearance with departure control at 0942 EDT. During the descent to enter the low-level route, Otto 23 collided with the ground. The ejection sequence was not initiated (Tab J-9). The crash site coordinates are 31 degrees, 19.1 minutes north latitude; 82 degrees, 50.2 minutes west longitude (Tab A-1). The site bears 045 degrees for 27 miles from Moody AFB. The Moody AFB Public Affairs office handled news inquiries (Tabs Z-6 thru Z-8).

2. Mission: Captain Clinton D. Bennett was scheduled to lead the four-ship mission, Depot 21, through the VR 1001 low-level route to Lake George Range and recover at Moody AFB (Tabs K-2 and V-8). During this mission Captain Bennett was to receive an Instrument/Qualification (I/Q) check ride from his number two wingman, LTC Krebbs. Approximately 15 minutes before the squadron's morning mass flight briefing, Captain Bennett notified Major Stuart of the check ride, and told him to fly the originally-scheduled tactical mission as a two-ship

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(Tabs V-2, V-7, and V-8). Major Stuart's planned mission profile for the two-ship tactical mission included single-ship afterburner take-offs, a weapon system check for Otto 24 during the rejoin to close formation, 300 foot (AGL) low-level navigation in line abreast tactical formation, weapons delivery for Major Stuart at Lake George gunnery range, weapons delivery for Capt Parmer at Pinecastle Range, Florida (R2910), and recovery to Moody AFB for landing (Tab V-2).

3. Briefing and Pre-flight: After flying the day prior to the accident, Major Stuart arrived at home between 1700 and 1800 EDT. The next morning he reported to the squadron with adequate crew rest at approximately 0630 EDT (Tabs V-7 and V-19). The squadron's mass flight briefing was scheduled for 0645 EDT that morning. The individual flight briefings for Depot 21 and Otto 23 were scheduled for 0730 EDT. After the ten-minute mass briefing, Major Stuart went to his wing plans office and picked up the mission materials from his previous day's single-ship low-level flight through VR 1001. The flight briefing began on time, and all required briefing items were covered. Major Stuart emphasized conventional weapons delivery techniques since Capt Parmer's weapons deliveries would be part of the squadron's top gun competition. Major Stuart delayed the scheduled takeoff time until 0940 EDT. The flight briefing ended at 0820 EDT, and the flight stepped out the door to their aircraft at 0840 EDT, as planned (Tab V-2). The flight started engines at 0910 EDT. After engine start, the crew chief notified Major Stuart that his aircraft (SN 81-798) had an inoperative fuel flow proportioner (FFP) light. Major Stuart requested maintenance to respond to the aircraft with a 'red ball' to determine the extent of the problem. The responding fuel specialist checked the light and the FFP system and determined the FFP to be operating properly. Major Stuart told the specialist he would take the aircraft (Tabs V-9 and V-10).

4. Flight: Otto 23 flight took off at 0940 EDT. The flight made single-ship, afterburner takeoffs with 20 second spacing between aircraft on the VAD 38 departure. Passing 1,000 feet MSL, the flight contacted Valdosta Departure Control and requested a left turn on course to the low-level start route point. Departure Control confirmed radar contact with Otto 23 and cleared the flight to turn left on course and climb to six thousand feet (Tab N). Otto 24 joined up to close formation on Otto 23's right wing after completing his weapon system check. Otto 23 signalled his wingman to move out to the prebriefed tactical formation (6000 feet, 0 to 10 degrees aft of line abreast), and Otto 24 moved out to proper position on the right side of Otto 23 (Tab V-2). At 0942 EDT, Departure Control told the flight that Moody MOA 2 was cold (not in use), and Otto 23 cancelled his IFR clearance and directed Otto 24 to change radio frequencies to the Flight Service Station (FSS) on 255.4. Otto 23 made two radio calls in the blind to the FSS, notifying them of Otto 23 flight's entry into VR 1001. The flight began a descent into the low-altitude environment while accelerating to the 480 knots ground speed planned for the low-level mission. While he was still 15 miles from the route start point, Otto 23 saw a radar contact approximately six miles southeast of Pearson and called it out to his wingman. When Otto 24 saw the same contact on radar, Otto 23 directed him to monitor the contact until it gimballed off the right side of his radar scope (5 or 6 miles south of Pearson). Approximately one-half mile south of Pearson, Otto 23 signalled Otto 24 to begin a tactical left turn to a heading of 315

degrees, the low-level's first leg on course heading. Otto 23 crossed 500 feet in front of and 200 feet below Otto 24 during the turn at approximately 1000 feet AGL in a shallow descent. As Otto 24 completed his turn, he checked his heading and the course required to navigate to the next low-level turnpoint, started the aircraft clock, and then looked back over his right wing to find his flight leader (Tab V-2). Otto 23 completed his turn to a heading of 300 degrees and immediately impacted the ground (Tab J-5). The fireball was observed by Otto 24. No video or audio recordings of the mishap were available.

5. Impact: The aircraft impacted in an open field just past a tree line, approximately 400 feet east of U.S. Highway 221/441, 1.8 miles north of Pearson, Georgia. The aircraft bounced, went through a house and traveled across the highway and was totally destroyed. The house, three adjacent storage sheds, a mobile home, and a parked car caught fire and were destroyed (Tab P). Other houses and autos on both the east and west sides of the highway sustained damage (Tab P). One civilian was fatally injured (Tabs V-13 and V-15). Flight parameters at impact were estimated by analyzing recovered portions of the aircraft, flight instruments, and aircraft equipment. The aircraft impacted the ground while on a magnetic heading of 300 degrees (Tab J-5) and a dive angle of at least eleven degrees (Tab R-2). There was no evidence of engine malfunction or emergency power unit (EPU) activation prior to impact. The engine was producing thrust and operating above idle, near military power. The engine was providing hydraulic power to the flight controls (Tabs J-4 and J-11). The aircraft wings were level with no roll inputs. The airspeed and angle of attack at impact were indeterminate (Tab J-12). There was no indication of a birdstrike, inflight fire, or adverse internal cockpit environment (Tab J-7). The pilot was conscious, with both feet on the rudder pedals, his right hand on the side stick controller, and his left hand off of the throttle at the time of impact (Tab J-8).

6. Ejection Seat: Analysis of the components of the ACES II ejection seat indicated the ejection sequence was not initiated. No evidence of equipment failure or maintenance discrepancies could be determined from the recovered components (Tab J-6).

7. Personal and Survival Equipment: Ejection was not initiated and survival equipment was not used (Tab J-6).

8. Crash Response: Otto 24 observed the fire shortly after Otto 23 impacted the ground and attempted to contact Otto 23 on both his UHF and VHF radios (Tab V-2). He then changed his UHF radio to preset channel five and transmitted mayday calls to Valdosta Departure Control (Tab N). He set up an orbit over the crash site at 5,000 feet (MSL) and remained on station for approximately one hour before his fuel status required him to return to Moody AFB. The supervisor of flying (SOF) contacted Otto 24 at 0953 EDT. The SOF accomplished the accident checklist along with Moody tower personnel and activated search and rescue operations (Tabs O-3 and V-12). He then notified the acting Wing Deputy Commander for Operations, Colonel Brake, and recalled the Wing Commander, who was flying at the time (Tab V-12). The base command post initiated the recall of the Disaster Control Group (DCG) which departed Moody AFB in two separate groups for the crash site. First to depart (at 1025 EDT) were the fire department, security police, and medical personnel. Upon arrival at the scene, the Moody AFB Fire Chief took control as the on-scene commander, assessed the situation, and repositioned the local fire departments. Approximately one hour later, the main body of the DCG arrived at the site. Local law enforcement officials (Georgia State Patrol and County Sheriff) had secured the area and local firefighters from Douglas, Pearson, and Waycross were working in close coordination with Moody AFB's fire department to control the fire. Upon arrival

at the scene, the 347th Combat Support Group Commander took command of the operation and immediately confirmed the two fatalities (pilot and civilian) with local medical and law enforcement authorities (Tab V-14).

9. Maintenance Documentation: A review of the AFTO 781 series aircraft forms revealed the aircraft to be properly configured, serviced, inspected, and released for flight by qualified maintenance personnel (Tab U). A Form 2407 change to the weekly flying schedule configuration had been initiated to authorize the configuration of three external fuel tanks (Tab K-5). Debriefing records show that the aircraft flew a Code 1 (no discrepancies) sortie the day prior to the mishap. However, on 22 May 90, the aircraft was written up for its forward fuel system's failure to feed (Tabs H-3, V-5, and V-17). The fuel flow proportioner (FFP) was replaced. There were no overdue inspections, time compliance technical orders, or time change items (Tab H).

10. Maintenance Personnel and Supervision: All personnel involved in the preflight, launch, and end-of-runway inspection were qualified and current (Tab H-6).

11. Oil Inspection Analysis: A review of the oil analysis records (Tab U-15), fuel test reports (Tab U-16), and liquid oxygen servicing cart report (Tab U-17) revealed no abnormalities.

12. Air Frame and Aircraft Systems:

a. Engine: Although extensively damaged at impact, the engine was determined to be operating near or just below military (MIL) power at the time of the impact (Tab J-2).

b. Instrument Systems: All recovered performance and control instruments were operating normally at impact with no evidence of failure or inflight fire (Tab J-5).

c. Flight Controls: Analysis revealed all flight controls to be electrically and hydraulically powered and operating normally at impact (Tab J-11).

d. Fuel System: The aircraft had a fuel system malfunction two days before the mishap. Recovered fuel instruments indicated that the aircraft had a fuel imbalance at the time of the accident. The forward fuel tank contained 2660 pounds of fuel rather than 3100 pounds, as prescribed by the technical orders for the aircraft (Tab V-10). The only other fuel reading recoverable indicated that the aircraft had 11,661 pounds of fuel on board (Tab J-5).

13. Operations Personnel and Supervisions: The mission was conducted under authority of the 347th Tactical Fighter Wing and the 68th Tactical Fighter Squadron. All supervisor briefings and actions were accomplished (Tabs K-2, V-7, and V-16).

14. Pilot Qualifications: Major Stuart was current and fully qualified to perform the scheduled mission (Tabs G and T). His flying experience (Tabs G-1 thru G-8) follows:

MAJOR AIRCRAFT	HOURS
Pilot Time	
F-16A/B	319.4
F-4 (FP)	856.3
F-4 (IP)	522.7
AT-38	30.8
Student Pilot	166.9
Total Pilot Time	1896.1
Weapon System Officer (WSO) Time	
F-4	599.5
AT-38	2.6
Student WSO	178.0
Total WSO Time	780.1
Total Flying Time	2676.2

RECENT HISTORY	HOURS/SORTIES
Last 30 Days	10.0 / 7
Last 60 Days	20.6 / 16
Last 90 Days	25.2 / 19

15. Medical: Major Stewart was medically qualified for flight at the time of the accident (Tab X-1). The toxicology report from the Armed Forces Institute of Pathology revealed no evidence of neutral, acid, or basic drugs (Tab X-1).

16. Navigation Aids and Facilities: Navigational aids and facilities were not involved in the accident.

17. Weather: The weather was clear sky condition, with seven (7) miles visibility, 78 degrees Fahrenheit, light winds from the East, and an altimeter setting of 30.08 (Tabs K-3, V-12, and W).

18. Directives and Publications:

a. Directives and publications applicable to the mishap were:

(1) AFR 60-16, General Flight Rules

(2) TACM 51-50, Tactical Aircrew Training

(3) TACR 55-116, F-16 Pilot Operational Procedues

(4) TACR 55-116/MAFB Sup 1, Local Operating Procedures

b. No deviations to regulations occurred.

Edward S. Cole

EDWARD S. COLE, Lieutenant Colonel, USAF
AFR 110-14 Accident Investigation Officer

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GLOSSARY

NOTE: Acronyms, jargon, and terms are explained in the context in which they appear in this report. The application of these definitions is not universal and may be limited to this report.

ACES II	- Ejection Seat for the F-16
AFB	- Air Force Base
AFR	- Air Force Regulation
AFTO	- Air Force Technical Order
AGL	- Above Ground Level
AGS	- Aircraft Generation Squadron
ALC	- Air Logistics Center
AMU	- Aircraft Maintenance Unit
AOA	- Angle of Attack: Angular difference between aircraft longitudinal axis and flight path
ATC	- Air Traffic Control
AVTR	- Audio/Video Tape Recorder
CC	- Commander
CDI	- Course Deviation Indicator: A device that tells a pilot if he is left or right of a selected course.
Check Ride	- Annual Evaluation of pilot's flying abilities.
CIVV	- Compressor Inlet Variable Vane
Code 1	- No maintenance discrepancies
Code 2	- Minor maintenance discrepancies
Code 3	- Major maintenance discrepancies
Contact	- A radar lock-on to a target aircraft
C Shop	- Maintenance's Component Repair Squadron, Avionics Branch
C/W	- Complied With
DO	- Deputy Commander for Operations
DOM	- Date of Manufacture
EDT	- Eastern Daylight Time
EOD	- Explosive Ordnance Disposal
EOR	- End of Runway; also applies to the 'last chance' maintenance inspection performed immediately prior to take off
FCNP	- Fire Control Navigation Panel
FFP	- Fuel Flow Proportioner
FP/IP	- First Pilot/Instructor Pilot: Terms used in logging flying time.
FSRS	- Frequency Selective Radar System
FSS	- Flight Service Station
Gimbal	- Term used to indicate a radar contact has drifted out of radar coverage--off of the pilot's radar scope.
Guard	- 243.0; UHF Radio emergency frequency
HUD	- Head-up display
IFR	- Instrument Flight Rules
INS	- Inertial Navigation System: A primary source of groundspeed, attitude, heading, and navigation information
IP	- Refers to either Instructor Pilot or the Initial Point for an attack against a surface target.
ISA	- Integrated Servo Actuator
JOAP (SOAP)	- Joint (Spectrometric) Oil Analysis Program

Lock-on	- When an aircraft radar system electronically illuminates a target aircraft and provides the pilot with target information, such as distance to the target, target airspeed, and closure rate
MAFBR	- Moody Air Force Base Regulation
MFL	- Maintenance Fault List
MFR	- Memo for Record
MIL	- Military: Maximum engine power without afterburner.
MOA	- Military Operating Area
MR	- Mission Ready
MSL	- Mean Sea Level: Used in conjunction with an altimeter, refers to altitude above sea level
NAVAID	- Navigation Aid
NDI	- Non-Destructive Inspection
NM	- Nautical Mile
NOTAMS	- Notices to Airmen
Otto 23	- Callsign of mishap aircraft.
Redball	- Maintenance response to an aircraft with engines running.
RESCAP	- Rescue Combat Air Patrol
RHAW	- Radar Homing And Warning
ROE	- Rules of Engagement
RWR	- Radar Warning Receiver
R2907	- Restricted area: Lake George Range
R2910	- Restricted area: Pinecastle Range
SA-ALC	- San Antonio - Air Logistics Center (Texas)
SAR	- Search and Rescue
SAT	- Surface attack tactics
SMS	- Stores Management System
SN	- Serial Number
SOF	- Supervisor of Flying: An officer responsible to the DO for monitoring and supervising flying operations at a base. Works directly for the DO when filling SOF position. SOF is an extension of the DO responsibility for overal operations.
Sortie	- Flight
Step Time	- The time that the pilots go to their aircraft to fly
TAC	- Tactical Air Command
TACAN	- Tactical Air Navigation: A system that gives direction (azimuth) and distance (DME) from ground stations.
TACM	- Tactical Air Command Manual
TACR	- Tactical Air Command Regulation
TAC Sup	- Tactical Air Command Supplement
T/C	- Time Change
Tally	- Visual sighting of a target/bandit
TCTO	- Time Compliance Technical Order
TFW	- Tactical Fighter Wing
TFS	- Tactical Fighter Squadron
TO	- Technical Order - a manual or reference document
TOT	- Time Over Target
UHF	- Ultra-High Frequency radio
VAD 38	- Local Moody flight plan (mishap flight plan).
VFR	- Visual Flight Rules
VHF	- Very-High Frequency radio
VR 1001	- VFR military low level training route flown on mishap sortie.
VTR	- Video Tape Recorder
WSO	- Weapon System Officer
Z	- Zulu (Greenwich Mean Time)