

AIRCRAFT ACCIDENT INVESTIGATION REPORT

AUTHORITY: Under the provisions of Air Force Regulation 110-14, the Ninth Air Force Commander (Rear) appointed Lieutenant Colonel Thomas K. Green to conduct an Aircraft Accident Investigation of the F-16C (Serial Number 89-2027) accident which occurred approximately twelve nautical miles southwest of Allendale, South Carolina. The investigation was conducted from 26 October 1990 to 13 November 1990. Technical advisors were Major Steve R. Kierce (Maintenance Advisor), Captain Bernard A. Anderson (Assistant Legal Advisor), Captain Donald R. Merritt (Technical Advisor), Captain Matthew D. Hall (Medical Advisor) and Sergeant Melvin Henderson (Administrative Assistant) (Tab Y).

PURPOSE: An aircraft accident investigation is convened under Air Force Regulation 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 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 Air Force Regulation 12-30.

SUMMARY OF FACTS

1. History of Flight: On 19 September 1990, Lieutenant Colonel Barry F. Bost and First Lieutenant Willy W. Herold were scheduled for a two-ship F-16C night strike training mission originating at Moody Air Force Base, Georgia. The call sign of the flight leader, Lieutenant Colonel Bost, was Nobby 91. The call sign of his wingman, Lieutenant Herold, was Nobby 92. The scheduled takeoff time was 2000 Eastern Daylight Time (Tab K-3). The flight departed Moody Air Force Base, Georgia at 1957 Eastern Daylight Time and proceeded direct to entry point Alpha on VR-94 (Tabs A-1, K-3, K-4). Entering VR-94, the planned flight routing called for radar low level navigation to a simulated weapon delivery on an off-range radar target near point Echo at the end of VR-94. After the simulated delivery, the flight was to return to Moody Air Force Base (Tabs V-14, Z-17). After passing point Delta on VR-94, Nobby 91 impacted the ground in a forested area. The mishap pilot was fatally injured and the aircraft was destroyed. The impact occurred at 2027 Eastern Daylight Time, twelve nautical miles southwest of Allendale, South Carolina and eighty-two nautical miles southwest of Shaw Air Force Base, South Carolina. The crash site coordinates are 32 degrees 48.1 minutes north latitude, 81 degrees 24.3 minutes west longitude (Tabs A-1, X-1, Z-18). The Moody Air Force Base Office of Public Affairs handled news inquiries (Tab Z).

2. Mission: Lieutenant Colonel Bost's two-ship, Nobby 91 flight, was to accomplish a night strike continuation training mission. The mission included single-ship military (one hundred percent) power takeoffs with ten seconds spacing, rejoin to fingertip formation, and split-up for single-ship radar low level missions with one minute (approximately eight nautical miles) separation

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on VR-94, low level radar navigation, simulated radar strikes, flight join-up for return to Moody Air Force Base, and split-up for single-ship practice instrument approaches (Tab V-14).

3. Briefing and Preflight: Lieutenant Colonel Bost arrived for duty at approximately 1200 Eastern Daylight Time on 19 September 1990 (Tabs V-2, V-14). He was adequately rested for the mission and showed no signs of stress (Tabs V-2, V-5, V-6, V-7, V-9, V-11, V-14, V-31, V-37). At 1300 Eastern Daylight Time, Lieutenant Herold and Lieutenant Colonel Bost discussed and planned the mission together. Lieutenant Colonel Bost told Lieutenant Herold that he had flown the exact same mission and low level (VR-94) two nights earlier and that much of the flight planning had already been accomplished. All planning and preflight preparations were accomplished prior to the mass briefing. The mass briefing was conducted by the squadron flying supervisor using the 347th Tactical Fighter Wing briefing guide and started on time at approximately 1730 Eastern Daylight Time. Both Lieutenant Colonel Bost and Lieutenant Herold were present at the briefing. Following the mass briefing, Lieutenant Colonel Bost began the mission briefing on time at 1800 Eastern Daylight Time. The briefing was conducted using the 347th Tactical Fighter Wing standard briefing guide. Lieutenant Colonel Bost briefed autopilot use and described his techniques for using the autopilot functions of altitude hold and steering select to fly the low level route. Lieutenant Colonel Bost discussed procedures for positioning switches for a simulated delivery of a simulated nuclear weapon. Lieutenant Colonel Bost briefed to fly the entire low level route at 2000 feet Mean Sea Level. This altitude is above all minimum enroute altitudes for the low level route of flight. Airspeed briefed throughout the low level was 480 knots ground speed up to the target leg, when acceleration to 540 knots was planned. Ground operations, taxi, and pre-takeoff procedures were conducted without any abnormalities (Tabs V-14, V-16).

4. Flight: Clearance Delivery cleared Nobby 91 flight for a Moody 63 stereo flight plan departure. At 1955 Eastern Daylight Time, Moody Air Force Base Tower cleared Nobby 91 flight for takeoff on runway 18R. The flight took off at 1957 Eastern Daylight Time. Single-ship, military (one hundred percent) power takeoffs were accomplished with Nobby 92 trailing Nobby 91 by ten seconds. After takeoff, the flight climbed straight ahead and contacted Valdosta approach control. Approach control cleared Nobby 91 flight to climb and maintain 7000 feet. Nobby 91 requested a turn on course and was granted a left turn on course direct to point Alpha on VR-94 at 7000 feet. Approaching VR-94 point Alpha, Nobby 91 flight accomplished climb/inflight/operational checks of the engine instruments, oxygen system, cockpit pressurization, and fuel system; cancelled instrument flight rules; and proceeded under visual flight rules. The flight descended to 6500 feet. Upon reaching point Alpha, the flight entered the holding orbit. Nobby 91 turned right to start the low level while Nobby 92 continued straight ahead in the holding orbit. Thirty seconds later, Nobby 92 turned right to arrive in trail of Nobby 91, and he confirmed eight miles spacing with his air-to-air radar. His airspeed was 480 knots, and both aircraft were at 2000 feet Mean Sea Level (Tab V-16). Passing each steerpoint on the low level, each pilot made a position report over the radio to the other pilot. Steerpoint number six was the initial point and coincided with a right-hand turn of eighty degrees. Nobby 91 reported at

steerpoint number six, and Nobby 92 acknowledged. Twenty seconds later, Nobby 91 transmitted on the radio, "Nobbys, cameras on REO, simulate," and Nobby 92 acknowledged (Tabs N-1, V-18). Between ten and fifteen seconds later, Nobby 92 noticed a small fire that got bigger. Five or more seconds later, Nobby 92 tried to communicate with Nobby 91 on the radio. With no response, Nobby 92 started a climbing turn over the crash site and made contact with the Moody Air Force Base supervisor of flying. Nobby 92 stayed in the area for approximately twenty minutes and then returned to Moody Air Force Base (Tabs N-1, V-18, V-19, V-33).

5. Impact: The aircraft impacted in an undeveloped, heavily-wooded, and swampy area twelve nautical miles southwest of Allendale, South Carolina, at 2027 Eastern Daylight Time (Tabs A-1, R-1, Z-18). The aircraft caught fire and was destroyed. The aircraft heading at the time of impact was 126 degrees magnetic (Tab R-1); attitude at impact was a shallow descent (Tab J-2) and approximately nine degrees right bank (Tab J-5). Analysis of the flight controls revealed a left roll rate of twenty-two degrees per second and an airspeed of greater than 480 knots (Tabs J-11, J-12). Engine analysis revealed that at impact, the engine was operating without augmentor at 96 to 97.5 percent revolutions per minute (Tab J-5). Life sciences equipment findings indicated that at the time of impact, the mishap pilot's head was in an erect posture and was looking slightly left and downward (Tab J-7). The legs were extended with both feet in contact with the rudder pedals. The right hand was in contact with the control stick. The left hand was not in contact with the throttle control and the left arm was angled away from the body and extended toward the inboard aspect of the left instrument console (Tab J-8). All findings support that the pilot was accomplishing some action with his left arm, and was also apparently looking down in this same general area, when cockpit disintegration occurred (Tab J-9). There was no indication of an inflight fire, explosion, or penetration of cockpit structures by foreign objects (Tab J-7).

6. Ejection Seat: After a detailed analysis was accomplished upon all recovered components of the ejection seat, it was determined that the ejection sequence was not initiated. In addition, no evidence was found of any equipment failure or maintenance discrepancies on the components (Tab J-9).

7. Personal and Survival Equipment: Review of life support records indicates that inspections on the survival kit, parachute, harness, anti-G suit, helmet, and oxygen mask were all current and no discrepancies were noted. In addition, it was determined that the mishap pilot was correctly restrained in the ejection seat and was wearing his helmet, mask, anti-G suit, and harness at the time of impact. The survival equipment and parachute were not used (Tabs J-7, J-8). The mishap video tape was recovered from the crash site, but it was not turned over to the Air Force Regulation 110-14 board as it was determined that it did not contain any relevant information. No part of the mishap flight had been recorded on the recovered tape.

8. Crash Response: Nobby 92 saw a fire two to three miles in front of his aircraft and just slightly right of course. No less than five seconds later, Nobby 92 tried to communicate with Nobby 91 on the radio. With no response from Nobby 91, Nobby 92 climbed and orbited the crash site. He contacted the

Moody Air Force Base supervisor of flying (Tabs N-1, V-18, V-33). Nobby 92 gave his position and his fuel on board. The supervisor of flying directed Nobby 92 to remain at the crash site until he had 3,500 pounds of fuel remaining, then return to base. Nobby 92 remained in the area for approximately twenty minutes, during which time he made many attempts to contact Lieutenant Colonel Bost on search and rescue frequency 282.8 MegaHertz (Tabs V-18, V-33). The supervisor of flying notified the Moody Air Force Base command post, who in turn, called Marine Corps Air Station, Beaufort. Helicopters from the Coast Guard and Marine Corps Air Station, Beaufort responded almost immediately. When they landed, the area was still aflame. They determined there were no survivors, reboarded the helicopter, and returned with a doctor (Tab V-8). Local authorities also responded. The next morning, Moody Air Force Base medical and other personnel arrived on scene (Tab V-39) along with personnel from Shaw Air Force Base for search and recovery efforts.

9. Maintenance Documentation: A review of the Air Force Technical Order Form 781 series aircraft forms revealed the aircraft was properly configured, serviced, inspected, and released for flight by qualified maintenance personnel (Tab U). The 19 September 1990 Air Force Technical Order Form 781A (Tab U-8) shows the aircraft flew discrepancy-free the afternoon of the mishap. There were no overdue inspections, time compliance technical orders, or time changes items (Tabs H-1, H-2). Oil analysis records were reviewed and no abnormalities were noted (Tab O-2). A repair or overhaul civilian agency was not used to do post-accident teardown work for the Air Force Regulation 110-14 Investigation Board.

10. Maintenance Personnel & Supervision: All personnel involved in the basic postflight, preflight, launch, and thru flight inspections were qualified and current (Tabs H-3, V-9, V-11, V-22, V-28, V-29, V-30). No evidence of improper maintenance associated with this crash was discovered.

11. Fluid Sample Analysis: A review of the oil analysis record (Tab O-2), fuel test reports (Tabs O-3, O-4, O-5), aircraft hydraulic fluid sample (Tab O-6), hydraulic servicing cart reports (Tabs O-7, O-8), liquid oxygen servicing cart report (Tab O-9), and liquid nitrogen servicing cart report (Tab O-10) revealed no abnormalities.

12. Airframe and Aircraft Systems:

a. Flight Controls: Analysis of available evidence indicates that the flight control system was functioning properly at the time of impact (Tabs J-11, J-12). The aircraft general avionics computer had generated reports of flight control system faults on some of the previous flights as documented on the data transfer cartridge printouts (Tabs O-11 through O-16). Pilots who flew the mishap aircraft testified they had not detected any degradation of the flight control system during their flights (Tabs V-13, V-25, V-27, V-35, V-37). The only flight control system fault documented by a pilot in the aircraft forms occurred on 13 September 1990 (Tab O-19). The fault was reported by the aircraft computer system to the pilot after landing; the pilot had not experienced any abnormalities with flight controls while airborne (Tab V-27). The discrepancy was troubleshot and cleared in accordance with current

maintenance technical orders by qualified maintenance technicians (Tabs V-10, V-20).

b. Engine: The engine was determined to be producing power without augmentor operation in the range of 96 to 97.5 percent revolutions per minute at impact with no evidence of failure or inflight fire (Tabs J-2 through J-5).

c. Instrument Systems: All recovered performance and control instruments had sustained major impact damage; however analysis of these components revealed nothing to indicate instrument or instrument system failure prior to impact or loss of input signal (Tab J-10).

13. Operations Personnel and Supervision: The mission was conducted under the authority of the 347th Tactical Fighter Wing and the 70th Tactical Fighter Squadron (Tab K-2). All supervisor briefings and actions were accomplished. The mass briefing was conducted by the squadron flying supervisor (Top Three), Major Roller (Tab V-31) using the 347th Tactical Fighter Wing standard briefing guide and was thorough and complete (Tab V-14). The flight briefing was conducted by Lieutenant Colonel Bost using the 347th Tactical Fighter Wing briefing guide and was thorough and complete (Tabs V-14, V-15).

14. Pilot Qualifications: Lieutenant Colonel Bost was current and fully qualified to perform the scheduled mission (Tab T-2). During his first three of five total F-16 check rides, discrepancies were noted in non-critical areas, but no additional training was required, and he was found qualified. His most recent tactical (Tab T-2) and instrument (Tab G-8) check rides were error free. His flying experience is as follows (Tabs C-1, G-1 through G-4).

F-16 AIRCRAFT			HOURS	OTHER AIRCRAFT			HOURS
F-16A	D		438.6	F-5	D		644.0
F-16B	-		19.3	F-4	D		1435.1
F-16C	-		20.3	T-38	D		1.5
F-16D	-		2.8	F-15	D		1.7
=====				=====			
F-16 (TOTAL)	-		481.0	TOTAL F-16/OTHER	-		2563.3

30/60/90 Day Summary (Tabs C-1, G-5, T-5, T-6)

DATES (1990)	F-16A		F-16B		F-16C		F-16D	
	FLIGHTS	HOURS	FLTS	HRS	FLTS	HRS	FLTS	HRS
21 Aug-19 Sep	4	5.3	0	0	10	12.9	0	0
22 Jul-19 Sep	4	5.3	0	0	15	20.3	1	1.4
22 Jun-19 Sep	5	6.2	2	2.6	15	20.3	2	2.8

15. Medical: Lieutenant Colonel Barry F. Bost was medically qualified for flight duties at the time of the accident (Tab T-3). The toxicology report given by the toxicologist for the Armed Forces Institute of Pathology revealed no evidence of routinely tested drugs or alcohol (Tab X-1).

16. Navigation Aids and Facilities: All applicable navigation aids were operational (Tab O-18).

17. Weather: The forecast and actual area weather for the time of the mishap was 25,000 thin broken, visibility 7 miles, calm winds and no turbulence. (Tabs K-5, V-14, W-2, W-3). It was very dark and there were more lights in the sky than on the ground. The horizon was not clearly discernable at the crash site (Tab V-14). The sun set at 1933 Eastern Daylight Time, and the moon set at 1943 Eastern Daylight Time. The moon illumination was zero percent (Tabs V-12, V-14, W-3).

18. Directions and Publications:

a. Following directives and publications applied to operation of the mission:

- (1) Air Force Regulation 35-10, Dress and Personal Appearance of Air Force Personnel, as supplemented by Moody Air Force Base Supplement 1.
- (2) Air Force Regulation 60-16, General Flight Rules.
- (3) Major Command Manual 55-125, Preparation of Mission Planning Materials.
- (4) Tactical Air Command Manual 51-50, Tactical Aircrew Training.
- (5) Tactical Air Command Regulation 55-116, F-16 Pilot Operational Procedures)
- (6) Moody Air Force Base Supplement One to Tactical Air Command Regulation 55-116, Local Operational Procedures.
- (7) Technical Order 1F-16C-1, F-16C/D Block 40 and 42 Flight Manual.
- (8) Technical Order 1F-16C-1CL-1, F-16C/D Block 40 and 42 Aircrew Checklist.
- (9) 347th Tactical Fighter Wing Briefing Guide.
- (10) 347th Tactical Fighter Wing Pilot Aid.

b. The following deviation was noted: The mishap pilot was in violation of Air Force Regulation 35-10, Moody Air Force Base Supplement One (dated 01 October 1989), paragraph 4-1a(1), because he wore jungle-type flight boots during the mishap flight (Tab J-7).



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Air Force Regulation 110-14 Aircraft Accident Investigation Officer

## GLOSSARY

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

AB	- Afterburner: engine augmentor provides extra thrust.
ADI	- Attitude director indicator: depicts aircraft spatial orientation (pitch/bank) with respect to the horizon.
ADO	- Assistant Deputy Commander for Operations. (See DO).
AF, AFB, AFR	- Air Force, Air Force Base, Air Force Regulation.
AFTO	- Air Force Technical Order.
AFSC	- Air Force Specialty Code. Identifies someone's skill. - Air Force Systems Command, parent command of ASD.
AGL	- Above ground level.
ALC	- Air Logistics Center.
AMU	- Aircraft Maintenance Unit.
ANTI-G SUIT	- Reduces the effect of increased gravitational forces.
AOA	- Angle-of-attack: angular difference between aircraft longitudinal axis of the aircraft and flight path.
ARMING AREA	- Place on ground where aircraft weapons are enabled.
ASD	- Aeronautical Systems Division, Wright-Patterson AFB, OH
ATC	- Air Traffic Control. - Air Training Command.
AUGMENTOR	- Synonymous with afterburner; provides extra thrust.
AVIONICS	- Internal electronics of the aircraft that provide information to the pilot and control aircraft systems.
AVTR	- Aircraft video tape recorder.
BPO	- Basic postflight inspection: maintenance inspection of aircraft after flight.
CC	- Commander.

CFT - Cockpit familiarization trainer: a cockpit mock-up.

CHECK RIDE - Flight examiner evaluates pilot inflight performance.

CIVV - Compressed inlet variable vane (part of the engine).

CODE ONE - Maintenance discrepancy-free.

CODE TWO - Minor maintenance discrepancies exist.

CODE THREE - Major maintenance discrepancies exist.

COMBAT MISSION SECTION - Annotated chart of a low level route of flight. The VR-94 pre-planned low level is one example.

CONTINUATION TRAINING - Readiness training for F-16 pilots.

CREW CHIEF - Maintenance technician who prepares an aircraft for flight; launches and recovers the aircraft.

CSD - Constant speed drive (part of the engine).

CTK - Consolidated tool kit: tools are marked and controlled by inventory, and checked after each job.

CV - Vice Commander.

CW, C/W - Complied with.

DBS-1 and DBS-2 - Doppler beam sharpening: improved ground resolution mode of the radar.

DED - Data entry display: displays avionics info to pilot.

DEDICATED CREW CHIEF - Crew chief assigned to one particular aircraft.

DELTA TOS - Delta time-on-station: avionics function that allows adjustment of navigation timing.

DME - Distance measuring equipment: measures slant range to a NAVAID; displays result in nautical miles.

DO - Deputy Commander for Operations: scope of command includes flying squadrons and all flying operations.

DTC - Data transfer cartridge: used before flight to upload aircraft computer systems and after flight to download them. The DTC is portable and carried by the pilot.

EDT, EST - Eastern Daylight Savings Time, Eastern Standard Time.

EOR - End (or beginning) of runway: maintenance inspection of the aircraft performed just prior to takeoff.

EP - Emergency procedure.

EPE - Emergency procedures evaluation: flight examiner tests pilot ability to handle EP's in F-16 simulator.

EPU - Emergency power unit: back-up aircraft system for electric power and hydraulic pressure.

ER - Exceptional release: a signature in the aircraft forms which authorizes an aircraft to be flown.

EU - Electronic unit: there are many of these in the F-16.

FCR - Fire control radar: the radar in the F-16.

FINGERTIP - Very close formation: wing tips are three feet apart.

FLCC; FLCS - Flight control computer; flight control system.

FLIGHT LEADER - The designated pilot-in-command of a formation.

FO, FOD - Foreign object, foreign object damage.

FTIT - Fan turbine inlet temperature: cockpit gauge that displays engine exhaust gas temperature.

GAC - General avionics computer: the central computer of the aircraft; "talks" to other onboard computers.

GCC - Graduated combat capability: a readiness training term denoting a level of training.

GUARD - Standard aviation emergency distress frequencies.

HQ - Headquarters.

HUD - Heads-up display: provides the pilot with flight information within his forward field of view.

IAW - In accordance with.

IFF - Identification, friend or foe: a transponder which sends identification information to ground stations.

IFR - Instrument flight rules: aircraft instruments needed/used. Visual references may or may not be available.

ILS - Instrument landing system: cockpit instruments provide precise azimuth and glide path alignment to a runway.

IMC - Instrument meteorological conditions. IFR required.

IMMENSURATED COORDINATES - Highly accurate latitude and longitude, measured to the 1000th of a degree.

INS - Inertial navigation system: self-contained source of speed, attitude, heading, and navigation information.

INSTRUMENT APPROACH - Procedural flight to a runway based on cockpit gauges.

INTERCEPT - One aircraft locates another and flies to his position.

IP - Initial point: a point on the ground used to update aircraft systems and to help navigate to the target.

ISA - Integrated servo actuator: electrically controlled, and hydraulically moves a flight control surface.

JFS - Jet fuel starter: device internal to the F-16 that runs on jet fuel and starts the F-16 engine.

JOAP (SOAP) - Joint (Spectrometric) Oil Analysis Program: engine oil samples obtained after flight are analyzed.

L - Local time.

LAO - Local area orientation flight.

LETTER OF X'S - Supervisor's approval of specific pilot qualifications.

LIFT - The aerodynamic force generated by the wing.

LINE-UP CARD - Pre-printed card that organizes mission planning data for pilot's use in-flight.

LMLG - Left main landing gear.

LOCK - To cause a radar lock. (See RADAR LOCK.)

LOW LEVEL - Flight close to the ground, typically 300-3000 feet.

LOX - Liquid oxygen (converted to breathing oxygen in flight).

MAC - Military Airlift Command.

MAJCOM - An Air Force Major Command.

MASS BRIEFING - Presentation of information common to all missions, usually given prior to individual mission briefings.

MASTER MODES - Cockpit selectable modes to set up the aircraft for a specific phase of flight or weapons delivery.

MCM - Major Command Manual.

MEA - Minimum enroute altitude: an altitude that clears obstacles by at least 1000 feet within 5 miles of the planned route of flight.

MFD - Multifunction display: cockpit device shows information selected by the pilot. Example: the radar display.

MFL - Maintenance fault list: computer-generated information displayed on the MFD about the status of avionics.

MILITARY POWER - Highest engine thrust without use of the augmentor.

MR - Mission ready: a pilot fully qualified in the unit's tasked missions.

MSL - Mean Sea Level: refers to altitude above sea level.

MSS - Mission support system: a mission planning computer; also loads the DTC for data transfer to the aircraft.

NAVAID - Navigation aid: a ground station that gives the pilot azimuth to that station. Some give slant range, too.

NCOIC - Non-commissioned officer in charge.

NCW, N/C/W - Not complied with.

NDI - Non-destructive inspection. X-ray is one example.

NIGHT PHASE BRIEFING - A review of night flying procedures and hazards.

NLG - Nose landing gear.

NM - Nautical mile: 6,076 feet.

NOBBY 91 - Call sign of the mishap pilot.

NOBBY 92 - Call sign of the mishap pilot's wingman.

NOTAM - Notice to airmen: information on the establishment, condition, or change in an aeronautical facility, service, or procedure that may affect a flight.

OAP - Offset aim point: a ground reference used for visual or radar identification of a turn point or target.

OFF-RANGE TARGET - A target chosen for a simulated weapons delivery for training purposes only. No ordnance is released.

PAR - Precision approach radar: ground controllers direct precise azimuth and glide path alignment to a runway.

PERCENT RPM - Engine power setting: RPM gauge reads zero to 110%

PFL - Pilot fault list: cockpit display of malfunctions.

PHASE INSPECTION - Maintenance scheduled by aircraft/engine time.

PILOT AID - Locally published operational information/procedures.

PREFLIGHT - Maintenance or pilot inspection of aircraft before flight.

PRO SUPER - Production superintendent: in charge of maintenance on the flight line.

PYLON - Aircraft hardware to which external loads are attached.

RADAR LOCK - The radar is tracking a designated target.

RADIAL - Azimuth (bearing) from a NAVAID.

RAPCON - Radar Approach Control: An air traffic control facility containing radar equipment and controllers.

RDR - Radar.

REDBALL - Quick response aircraft maintenance assistance.

REO - Radar/electro-optical display: cockpit radar scope.

RHAW - Radar Homing and Warning System: A device designed to warn the pilot of enemy attack.

RMLG - Right main landing gear.

ROUND DIALS - Attitude, heading, airspeed, vertical velocity, and altimeter gauges (as opposed to heads-up displays).

ROUTE FORMATION - Wide spaced formation; up to 500 feet laterally.

RPM - Revolutions per minute.

RTU - Replacement training unit: where pilots are trained to fly a combat system such as the F-16.

RVR OR VR - Runway visual range: a measure of visibility.

SA-ALC - San Antonio D Air Logistics Center (Texas).

SAT - Surface attack tactics: mission for practice of weapons delivery upon ground targets.

SEFE - Standardization/evaluation flight examiner. Pilot who administers check rides.

SELO - Squadron standardization/evaluation liaison officer.

SERVICING CART - Maintenance equipment for loading fluids on aircraft.

SFO - Simulated flame-out: engine set at idle power and aircraft flown as if the engine had quit.

SIMULATE (SIM) - Cockpit switch that emulates armed weapons modes and displays, but prevents ordnance arming or release.

SMS - Stores management system: programs configuration of the aircraft. Controls arming and release of weapons.

SN - Serial number.

SOF - Supervisor of flying: experienced F-16 pilot who monitors and supervises base F-16 flying operations.

STAN/EVAL - Standardization/Evaluation Division. Wing staff agency that administers check rides and establishes flight standards for F-16 flying operations.

STEERPOINT - A point programmed in the INS to which heading and range may be displayed and the autopilot steered.

STEP - The pilot leaves the squadron to go to his aircraft.

STEREO FLIGHT PLAN - A locally developed flight plan for a standard route of flight originating and returning to Moody AFB.

SWITCHOLOGY - Proper switch combinations in the correct sequence to command a specific function--typically weapons release.

TAC - Tactical Air Command.

TACAN - Tactical Air Navigation: F-16 compatible NAVAID that gives azimuth and distance (DME) information.

TACM - Tactical Air Command Manual.

TACR - Tactical Air Command Regulation.

TAC SUPP - Tactical Air Command Supplement.

TARGET LEG - A portion of the flight that is the final route prior to target; also called IP-to-target leg.

TCTO - Time Compliance Technical Order.

TELEAUTOGRAPH, OR TELEWRITER - Device for electronically relaying the weather observer's written observation, forecast, or comments.

TFS - Tactical Fighter Squadron.

TFW - Tactical Fighter Wing.

THREAT OF THE DAY - Briefing to pilots on a selected enemy system.

THRU FLIGHT - Maintenance inspection of aircraft between flights.

TO, T.O. - Technical Order: a manual or reference document.

TOP THREE - Duty supervisor: either the squadron commander, operations officer, or assistant operations officer.

TWO-SHIP - Two aircraft assigned to fly together in formation.

UHF - Ultra high frequency: radio band for military communication.

UNIFORM - Term for UHF radio.

VFR - Visual flight rules: primary reference for flight is outside the cockpit; VFR prohibited in IMC.

VHF - Very high frequency: radio band for aviation communication.

VICTOR - Term for VHF radio.

VMC - Visual meteorological conditions. VFR is permitted.

VR-94 - Visual route number 94: a specific low level route.

VTR - Video tape recorder.

VVI - Vertical velocity indicator: a cockpit instrument that displays rate of climb or descent.

WEAPON SYSTEMS CHECK - An airborne check of certain aircraft systems.

WINGMAN - Pilot other than the flight leader in a formation.

Z - Zulu, Greenwich Mean, and Coordinated Universal Time.

TAB H

AFTO FORM 781 SERIES.....H-1  
MFR: MAINTENANCE PERSONNEL QUALIFICATION.....H-3\*

\*ADDED BY THE 110-14 AIRCRAFT ACCIDENT INVESTIGATION BOARD

TAB H

AFTO Form 781 Series

All 781 series forms for the mishap aircraft were retrieved and reviewed for accuracy and completeness.

This section provides a review of aircraft history from its arrival at Moody AFB, GA on 6 Sep 90 to the mishap sortie on the evening of 19 Sep 90.

1. Aircraft 89-2027 arrived at Moody AFB GA on 6 Sep 90, code 1, from General Dynamics, Fort Worth, TX. Total aircraft time was 5.7 hours.

The acceptance inspection that followed included a part number/serial number verification on all major aircraft components, including the F110-GE-100 engine, serial number GE-E509994. The seat and canopy were removed to facilitate a life support inspection. The part number/serial number verification for the egress system was waived. The acceptance inspection was completed on 10 Sep 90.

2. From 11 Sep 90 until the mishap sortie on 19 Sep 90, aircraft 89-2027 flew 8 sorties. The aircraft had 0 code 3, 4 code 2 and 4 code 1 sorties. The mishap sortie was its ninth sortie at Moody AFB. All required pre-flight, thru flight and basic post-flight inspections were accomplished.

The following is a breakdown of the sorties flown to include date, duration, landing code, discrepancies and corrective actions.

DATE	SORTIE/DURATION	CODE	DISCREPANCY	CORRECTIVE ACTION
19 Sep 90	2/.5 1/1.2	- 1	Mishap Sortie	
18 Sep 90	2/1.3 1/1.2	2 1	FCR fail PFL just prior to landing. FCR 114 MFL.	Cleared MFL. Ran 3 bit checks. No reoccurrence.
14 Sep 90	1/1.1	1		
13 Sep 90	2/1.1 1/1.3	2 1	FLCS single fail PFL. MFL 0048, 0009.	Could not duplicate malfunction. Reset and system ops check good IAW 1F-16-2-27CG-00-1
11 Sep 90	2/0.8 1/1.6	2 2	Had MSL MFL 004 and MSL slave fail PFL. FCR fail PFL about 1 + 10 into flight. Cycled FCR power and cleared MFL. Radar worked good rest of flight.	Reprogrammed ECIU. Performed functional check on stations 1 and 9. Both checked good. Momentary undesirable condition IAW 94 FI-00-1. Reset system IAW 94 JG-60-2.

3. Open 781A discrepancies: one  
     -21 Inventory Due  
     (Red Dash)
4. Open 781K discrepancies: None
5. Inspections overdue: None. Last inspection completed: initial  
     acceptance inspection 10 Sep 90.
6. Time changes overdue: None.
7. TCTOs not complied with:

TCTO No.	Description	T.O. Date	Gnd/Exp Date
1F-16-1444	Final inspection of SEAWARS on ACES II (Egress)	3 Sep 87	5 Jan 91
1F-16-1750	Inspection of AN/ALE-40 Chaff flare Dispenser	30 Apr 90	1 Mar 91
1F-16-1726	Removal and reinstallation of ACES II	10 Mar 90	4 Jun 91
1F-16-1708	Replacement of General Avionics Computer	31 Jul 90	30 May 92
TAC-CLASS-1B-MOD	Installation of Master Arm Switch cover	2 Jul 90	1 Nov 99