RAS 5848 72-22-ISFSI — Joint Exhibit 4 — Rec'd 4/11/02

AIRCRAFT ACCIDENT INVESTIGATION REPORT SUMMARY

1. AUTHORITY AND PURPOSE.

a. Authority. Under the authority of Air Force Regulation (AFR) 110-14, the Ninth Air Force Commander appointed Lt Col Robert J. Scully (TAB Y-1) to conduct an aircraft accident investigation of a United States Air Force (USAF) F-16C aircraft (serial number 89-2089) accident that occurred on 16 December 1991, at approximately 5:17 pm EST, 2.5 nautical miles west, southwest of Mullins, South Carolina. The investigation was conducted from 28 January to 27 February 1992. Technical advice and support were provided by Major Robert F. Russell (Legal Advisor), Capt Charles R. Epperson (Legal Advisor), Capt Thomas W. Manion (Operations Advisor), Capt David A. Durland (Maintenance Advisor), Capt George F. Craft (Medical Advisor) and Staff Sergeant Debra R. Clifton (Administrative Support) (TAB Y-2).

b. Purpose. An AFR 110-14 aircraft accident investigation is convened 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 it is not intended to determine the cause of the accident. In addition, the aircraft accident investigation officer 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.

2. HISTORY OF FLIGHT.

a. Overview. On 16 December 1991, Capt David R. Rue, an F-16 pilot assigned to the 19th Fighter Squadron (FS), 363d Fighter Wing (FW) at Shaw Air Force Base (AFB), South Carolina (S.C.), was scheduled to fly as the flight lead of a two-ship night intercept sortie (TABs K-1, K-4, K-7, V-3). The flight briefed, stepped, and started on time. The flight took off on time, performed an afterburner formation takeoff, and proceeded on course to a local military operating area (MOA). Shortly after leveling-off at 16,300 feet MSL and 328 KIAS, Capt Rue, the mishap pilot (MP), experienced an engine malfunction and declared an emergency. The MP began performing the critical action procedures (CAPs) for an engine airstart and started a descending right hand turn toward an emergency divert airfield. During the airstart sequence, the wingman advised the MP that he was on fire. MP ejected successfully at approximately 11,000 feet MSL. The aircraft impacted in an open field and was destroyed (TABs V-2, V-3).

b. Mission. Planned mission objectives were safe night operations including intercepts and simulated AMRAAM employment. Mission elements included a formation afterburner takeoff, standard climbout to three thousand feet on runway heading, level-off in the block 16,000 - 17,000 feet MSL as assigned by Jacksonville Center, cruise to Gamecock Alpha MOA, split-up for night intercept training simulating AMRAAM employment, rejoin for a standard recovery direct to Shaw AFB, flight split-up for individual instrument approaches, and full stop landings (TABs V-2, V-3).

c. Mission Preparation. The mission was authorized by Lt Col Rocky P. Capozzi, Operations Officer of the 19th Fighter Squadron (TAB K-5). Capt Rue (Blower 41) and Maj Robert D. Gibbons (Blower 42) both testified they had adequate crew rest for the mission in accordance with AFR 60-1 (TABs V-2, V-3). Flight preparation included filing the flight plan, checking the weather and NOTAMs, and completing a line up card with all relative information (TABs K-1, K-2). A night phase briefing was also conducted to emphasize the night procedures to be used as well as any other night considerations (TAB V-3).

The mission briefing began at 3:00 pm EST, and lasted approximately forty-five minutes to an hour. Blower 41 and Blower 42 were present at the briefing. Emphasis was placed on safe night operations as well as simulated AMRAAM employment. The briefing was conducted in accordance with TACR 55-116 with no discrepancies noted. All administrative pre-flight requirements were accomplished and the pilots stepped to the aircraft on time (TABs V-2, V-3).

d. Flight.

(1) Pre-flight Operations. At approximately 9:00 am EST on 16 December 1991, aircraft 89-2089 was ground aborted for electrical problems. Aircraft pre-flight inspection, engine start, and taxi were normal. At the end of the runway prior to takeoff, the aircraft battery was removed and replaced, a power distribution check accomplished, and the aircraft cleared for flight. This procedure required the pilot to shut-down the engine and then restart after maintenance was complete. Subsequently, the pilot experienced a flickering aircraft battery caution light, which led to the ground abort. The write-up in the aircraft forms indicated a suspected bad battery charger. Throughout the day specialists worked to correct this problem (U-5 through U-16). An engine run was accomplished as part of the required maintenance operational checks. At some time between the first engine start of the day and the pre-flight inspection by Blower 41 at approximately 3:00 pm EST, an engine no-go BIT Ball tripped (TABs V-6, V-7, V-9).

When Blower 41 arrived at aircraft 89-2089, electronics specialists were just completing maintenance on the battery charger. The production superintendent (P-1) and an engine specialist were also present. During his pre-flight inspection of the aircraft, Blower 41 discovered that an engine no-go BIT Ball had tripped. According to local procedures, Blower 41 informed P-1 of the problem. P-1 indicated that the problem was minor in nature, that the fault had been downloaded and cleared, and that the engine no-go BIT Ball should reset upon engine start (TABs V-3, V-5, V-8).

Blower 41's engine start was uneventful with the exception that the engine no-go BIT Ball did not reset. Blower 41 contacted the squadron operations supervisor to determine whether he should stay with aircraft 89-2089 until maintenance was performed, or if he was to immediately go to a spare aircraft. He was directed to stay in aircraft 89-2089, and told that he would have to shut-down the engine so maintenance could download and clear the fault. Blower 41 complied with the operations supervisor's guidance, and was

cleared by maintenance to restart the engine approximately five minutes after engine shut-down. Blower 41 was unable to observe any of the maintenance taking place under the engine on the right, rear portion of the aircraft (TABs V-1, V-3). After the second engine start, the engine no-go BIT Ball reset and P-1 cleared the aircraft to fly. Taxi, marshalling and arming, and takeoff were normal (TABs V-2, V-3, V-8).

(2) Flight Operations. Blower 41 flight followed a standard climbout profile enroute to Gamecock Alpha MOA, approximately 80 nautical miles (NM) northeast of Shaw AFB, S.C. After hand-off to Jacksonville Air Traffic Control Center, Blower 41 flight was directed to level-off in the block altitude 16,000 - 17,000 feet MSL. The first indication that a problem existed with Blower 41's aircraft was just as the flight was leveling-off at approximately 16,300 feet MSL and 328 KIAS (TAB V-3).

Approaching the level-off altitude, Blower 42 noticed a little bit of light coming out of Blower 41's tailpipe. He assumed Blower 41 was initiating afterburner. The light very quickly turned into flame. The flame was bright yellow, cylindrical in shape, and started at the engine nozzle area and extended for about two-thirds the length of the aircraft. This flame lasted for approximately three to four seconds, then disappeared. Subsequent shorter and tapered flames then pulsated, about one to two per second, for a few seconds more. Blower 42 made a radio call informing Blower 41 that he had flames coming out of his engine. At about this same time, Blower 42 saw the external fuel tanks come off Blower 41's aircraft and saw his nose pitch up (TAB V-2).

Blower 41's first indication of a problem was a rapid deceleration. He analyzed the problem as an engine malfunction, concluded that the engine was not running, and decided the proper corrective action was to initiate an engine airstart. He accomplished the critical action procedures (CAPs) for initiating an airstart: zoom, stores jettison, throttle off, airspeed as required, JFS start two, throttle idle (TAB V-3). Blower 41 contacted Washington Center to inform them of his emergency, requested a vector to Florence Regional Airport, and started a descending right hand turn back toward Florence (TABs V-2, V-3).

About the time Blower 41 rolled out of his turn toward Florence, Blower 42 noticed some thin, wispy, white smoke that started about an aircraft length behind Blower 41's aircraft. He informed Blower 41 that he was trailing smoke from his aircraft and received acknowledgment. Almost simultaneously, the flames returned, only this time the flames were bigger and brighter and were about the length of the airplane. Blower 42 informed Blower 41 again that he had flames coming out of his jet (TAB V-2).

Blower 41's first indication that the engine was not starting properly was that his wingman was advising him of smoke/sparks emitting from the rear of his aircraft. The primary cockpit indication that the airstart was unsuccessful was that the RPM stagnated at approximately thirty-eight percent. At this time, Blower 41 asked Blower 42 to confirm the presence of fire (TAB V-3).

After informing Blower 41 the second time of flames coming from his aircraft, Blower 42 noticed sparks coming out of the engine. The sparks were bright orange and came out a few feet behind the engine, then fell out the bottom of the flames and disappeared. Blower 41 asked Blower 42 to confirm that he was "on fire". Blower 42 saw flames and what he felt to be pieces of Blower 41's engine or aircraft falling out the back, and told Blower 41, "you are on fire" (TABs V-2, V-3).

Based on his assessment that the attempted airstart was unsuccessful and confirmation by Blower 42 that his aircraft was on fire, Blower 41 decided to initiate a controlled ejection in accordance with Dash-One emergency procedures. After making the decision to eject, Blower 41 confirmed the seat was armed, assumed the proper body position, and pulled the ejection handle. The ejection was initiated within the ejection envelope and all systems functioned as designed. Blower 41 landed in some trees and came to rest about two feet off the ground. He sustained only minor injuries as a result of the ejection (TAB V-3).

After confirming that Blower 41 was on fire, Blower 42 was directed to get away from Blower 41. Blower 42 then saw the canopy depart Blower 41's aircraft and the ejection seat rockets fire. Immediately after the ejection, Blower 41's aircraft assumed a slight left bank, slightly nose low attitude, and was not seen again by Blower 42 until impact. Blower 42 looked back over his right shoulder and saw Blower 41's parachute. He started a right turn to keep the parachute in sight until it hit the ground (TAB V-2).

Blower 42 was handed off to Florence approach. He explained the situation and directed Florence to keep all air traffic out of the vicinity of the crash. Blower 42 contacted the 363 FW Supervisor of Flying (SOF) who initiated the crash recovery net, and informed the SOF that the parachute was on the ground. Blower 42 made several passes over the parachute landing area, but was unable to see anything due to darkness. He made several attempts on frequencies 243.0 and 282.8 to contact Blower 41, with no success. The SOF instructed Blower 42 to mark the position of the fuel tanks, aircraft wreckage, and the pilot, and then return to base. The SOF informed Blower 42 that Blower 41 had just contacted the base by telephone (TAB V-2).

e. Impact. Aircraft 89-2089 impacted the ground on 16 December 1991, 2.5 NM Southwest of Mullins, South Carolina, at approximately 5:17 pm EST. The aircraft was approximately 24 degrees nose low and 50 degrees right roll, traveling at 428 KCAS on a true heading of 183 degrees, with a 1.58 degrees angle of attack. The aircraft was destroyed on impact (TABs A-1, O-15, O-17).

3. LIFE SUPPORT EQUIPMENT.

a. Ejection Seat. A controlled ejection was initiated at approximately 11,000 feet MSL and 230 KIAS. The ejection seat functioned normally as per the Dash-One (TAB V-3).

b. Personal and Survival Equipment. All inspections of the MP's personal equipment and aircraft survival equipment were current. All equipment functioned properly (TABs O-18, O-19, O-20, V-3).

4. RESCUE. Blower 42 made several attempts to contact Blower 41 on 243.0 and 282.8, but no contact was made. Blower 42 then contacted the Shaw AFB Supervisor of Flying (SOF), who initiated the crash response net (TAB V-2). The MP walked to a nearby house and made a collect telephone call to Shaw AFB Command Post. The MP was then transported to Mullins Community Hospital by civilian personnel (TAB V-3).

5. CRASH RESPONSE. Aircraft 89-2089 crashed at approximately 5:17 pm EST. The Shaw AFB crash net was activated at approximately 5:24pm EST. Fire Chief Don Spitzer was dispatched from Shaw AFB to the scene, and he arrived at approximately 6:40 pm EST. Upon arrival, Chief Spitzer noted that the Mullins, S.C., Fire Department, Marion, S.C., Fire Department, as well as the South Carolina Highway Patrol had secured the area. The 363 FW Deputy Commander for Operations, 363 FW Combat Support Group Commander, 17 Fighter Squadron Commander, and a 363 Medical Group Flight Surgeon arrived at the crash site at approximately 7:40 pm EST. The MP was treated and held at the Mullins Community Hospital until personnel from Shaw AFB arrived (TAB V-11).

6. MAINTENANCE AND MATERIAL.

a. Maintenance Documentation. A thorough review of the aircraft and engine records was performed. No discrepancies existed of a serious nature that may have related to the accident (TAB H). All Time Compliance Technical Orders (TCTOs) and Time Change Items (TCIs) were complied with except those noted (TABs H-3, H-4). None were overdue (TAB H-3). There were no overdue scheduled inspections, nor were any pertinent to the accident (TAB U-1). The Joint Oil Analysis Program (JOAP) records were reviewed and showed no changes in wear level or abnormal trends in the engine (TAB J-11). Maintenance debriefing records for the last 20 sorties were also reviewed and showed nothing of a serious nature (TABs U-17 through U-36). The AFTO forms 781A were reviewed with no discrepancies noted that were pertinent to the accident (TABs H-1 through H-3).

b. Maintenance Personnel and Maintenance Supervision. The mishap aircraft received a pre-flight inspection at 5:45 pm EST on Friday, 13 December 1991. A walkaround inspection was accomplished prior to launch on 16 December 1991 (TAB U-3). These inspections were performed by a qualified crew chief (TAB H-5) and complied with technical order (T.O.) 1F-16CG-6WC-1 (-6WC). The Exceptional Release was signed-off by a qualified production superintendent prior to the aircraft's second scheduled sortie of the day on which the mishap occurred (TAB U-3).

There are two primary T.O.s used by crew chiefs and engine specialists to detect engine faults and perform engine maintenance. The first is T.O. -6WC, Combined Preflight/Postflight, End-of-Runway, Thruflight, Launch and Recovery, Quick Turnaround, Basic Postflight, and Walkaround Before First Flight of Day Inspection Workcards. In each case where T.O. -6WC requires the crew chief to check system fault indicators (BIT Balls) for tripped flags, the reference is

to the second T.O. 1F-16CG-2-70FI-00-21 (-70FI). T.O. -70FI, Fault Isolation, Power Plant, Model F100-PW-220, is used to determine what maintenance is required, based on flowing through logic trees corresponding to specific Engine Diagnostic Unit (EDU) fault codes.

There are two pieces of equipment used by engine specialists to determine what engine fault has occurred, the Data Collection Unit (DCU) and the Engine Analyzer Unit (EAU). Both the DCU and EAU are designed to read and display the fault codes stored in the EDU. The four digit fault code stored in the EDU is used to enter T.O. -70FI to determine the appropriate logic tree to follow to troubleshoot and perform required maintenance.

The DCU is easily transportable and requires only one cable hookup to the aircraft to access EDU data. The DCU can read, store, transfer to the Ground Station Unit (GSU), and erase data stored in the EDU. The only time downloading engine data using the DCU is directed by T.O. -6WC is in the Basic Postflight Inspection, which contains requirements in addition to the Thruflight inspection, after the last flight of the day. The one time T.O. -70FI directs use of the DCU is to download and store EDU fault data prior to clearing the EDU memory with the EAU during troubleshooting and maintenance.

The EAU is more sophisticated, physically harder to manage, and more complicated to hookup to the aircraft than the DCU. It can only read and erase EDU data, but has the capability to do a real-time read of data in both the EDU and the Digital Electronic Engine Control (DEEC) with the engine running. The EAU is the primary piece of diagnostic equipment for troubleshooting any engine fault code. T.O. -70FI requires the use of the EAU each time a Pilot Fault List (PFL), Maintenance Fault List (MFL), or engine no-go BIT Ball indicates the presence of an engine fault.

Anytime you enter T.O. -70FI because of a PFL, MFL, or tripped engine no-go BIT Ball, the first step in the corrective action is to "review event/fault data using EAU and then troubleshoot and perform corrective procedures for detected events/faults, refer to supplemental data, Tables 9-1 and 9-6". Table 9-1 gives detailed procedures on engine data review using the EAU, and Table 9-6 contains EDU event, EDU fault, DEEC fault, system fault and EDU advisory code references. The four digit fault codes read from the EDU by the EAU is referenced in Table 9-6, which then directs the use of the appropriate maintenance logic tree.

On 16 December 1991, the engine specialist responsible for performing troubleshooting and maintenance on aircraft 89-2089, after discovering a tripped engine no-go BIT Ball, did not follow T.O. procedures (TABs V-5, V-8). T.O. -70FI was not at the aircraft to be referenced for the proper troubleshooting and maintenance procedures (TAB V-5). The engine specialist obtained a DCU from the expediter and used it to review the EDU fault code data (TAB V-8). Although not in accordance with T.O. -70FI, the DCU is capable of reviewing the same fault code data in the EDU as the EAU. The engine specialist determined that system fault code 4061 was stored in the EDU (TABs V-5, V-8). Had the engine specialist entered T.O. -70FI with a 4061 engine fault code, he would have been directed to 73-00-ZQ, the appropriate logic tree for troubleshooting and maintenance. Instead, the engine

specialist attempted to clear the EDU memory with the DCU (TAB V8). This procedure completely erases any usable maintenance fault data in the EDU, and unless stored first in the DCU, it is unrecoverable. No attempt to store the data was made (TAB V-8).

After clearing the EDU memory with either the EAU or DCU, the engine no-go BIT Ball should reset automatically upon engine start, unless the fault reoccurs or a new fault is detected. On 16 December 1991, the engine no-go BIT Ball did not reset when the MP started the engine (TABs V-3, V-8). The EDU memory cannot be cleared using the DCU with external power applied to the aircraft. The electronics specialists had power on the aircraft when the first attempt to clear the EDU memory was made (TAB V-8). The engine specialist had the MP shut-down the engine, attempted to clear the EDU memory using the DCU, again without saving the data, and then directed the MP to restart the engine. Following the second engine start, the engine no-go BIT Ball reset, indicating that no engine faults were present at that time (TABs V-3, V-5, V-8). The production superintendent (P-1), who was present and observed the engine specialist throughout this process, cleared the aircraft for flight based on the recommendation of the engine specialist (TABs V-5, V-8). The P-1 knew that the engine specialist had not consulted any T.O. while reading and clearing the engine fault code, and that the procedures being used were not in compliance with T.O. -70FI (TAB V-5).

Both the P-1 and the engine specialist testified that in most cases while flying operations are taking place, especially in Red Ball situations with a pilot in the cockpit trying to make his scheduled takeoff time, the accepted procedure for troubleshooting an engine fault indication was not in compliance with T.O. -70FI. The procedure used was to shut-down the aircraft engine, read the fault code with a DCU, attempt to clear the fault by erasing the EDU memory, and to restart the aircraft engine to see if the fault indication reoccurred. If the fault indication reoccurred, the aircraft was ground aborted and troubleshooting and maintenance performed in compliance with T.O. -70FI. If the fault indication did not reoccur, the aircraft was cleared for flight, and the fault indication treated as erroneous or as a "computer glitch" (TABs V-5, V-8).

While unwritten, this procedure appeared to be widely accepted throughout the 363 FW. Telephone conversations with Air Force Engineering and Technical Services Representatives, engine specialists, and production supervisors in the 57 FW at Nellis AFB and the 58 TW at Luke AFB indicated that, to varying degrees, comparable procedures were, or had been, used in similar circumstances. In addition to the urgency of flying the scheduled sorties, two factors were cited as rationale for the abbreviated troubleshooting procedure. The first was the difficulty and time required to hookup the EAU to the aircraft for analyzing fault codes; and the second was the perceived abundance of false fault indications or computer glitches (TABs V-5, V-8).

Although T.O. -70FI directs use of the EAU to review EDU fault data, the DCU performs the same function more efficiently. In addition, the DCU can store the EDU fault data and transfer it to the GSU, which provides maintenance with a historical data bank of fault indications by engine. The EAU is not capable of storing or transferring EDU data. T.O. -70FI interrupts troubleshooting, with the EAU connected, and directs downloading and storing

the EDU data with a DCU. This normally requires the EAU to be disconnected while using the DCU, then reconnected prior to resuming the required maintenance.

The F100-PW-220 Engine Monitoring System (EMS) was designed to report only those items on which action should be taken, items that can be readily isolated, and to avoid reporting unconfirmed faults/events in order to maintain the credibility of the EMS. Some of the engine specialists in the 363 FW have previous experience with the GE-110 engine, which was more prone to erroneous fault indications (TAB V-5). In addition, the troubleshooting procedure for several systems in the F-16 is very similar to the abbreviated procedure being used for the -220 engine when fault indications appear (TAB V-8). Although not specified in any T.O., the Fire Control Radar (FCR) is turned off whenever a PFL or MFL indicates the FCR has malfunctioned. The fault indications are cleared and the FCR is turned back on. If the malfunction indication does not reoccur, the system is considered good and the fault indication treated as erroneous. This same type of troubleshooting procedure is used for the radar warning receiver, the Heads Up Display (HUD), Multi-function Display (MFD), Up Front Control (UFC), Stores Management System (SMS), Inertial Navigation System (INS) and almost any cockpit controlled system in the aircraft.

c. Fuel, Hydraulic, and Oil Inspection Analysis. Analysis of fuel and liquid oxygen samples taken from refuelers, fillstands, and aircraft, showed that all fuel met or exceeded acceptable standards and that the liquid oxygen was clean and free of odor (TABs J-12, J-13). Hydraulic samples were not taken (TAB U-2). JOAP paperwork showed no trends or abnormalities (TAB J-11).

d. Airframe and Aircraft Systems. Analysis of the mishap aircraft engine found no evidence suggesting that a catastrophic engine failure had occurred. The engine was in SEC mode at impact, and the second through fourth stages of the turbine experienced a massive overtemp condition in flight (TABs J-9, J-10).

7. PILOT QUALIFICATIONS. A review of Capt Rue's flight records showed that he had a total of 1560.1 flying hours, with 410.4 hours in the F-16 C/D. Capt Rue was administered a Tactical Flight Evaluation on 12 December 1991, and was evaluated as qualified with no discrepancies (TAB E-3). A review of the 30/60/90 day lookback showed Capt Rue accumulated 30/59.6/92.1 flying hours respectively (TAB E-1). Training records reflect that Capt Rue was a qualified 2-Ship Flight Lead and was just entered into the 4-Ship Flight Lead Upgrade Program. Capt Rue was qualified and current for flight at the time of the accident (TAB E-11).

8. MEDICAL QUALIFICATIONS. Capt Rue was medically cleared for flying at the time of the accident. A review of his medical records showed that he was in excellent health. A Toxicology Evaluation was performed by the Air Force Institute of Pathology on 18 December 1991, and all results were negative. Capt Rue sustained minor injuries upon ejection, and was returned to flying status three days after the accident (TAB X-1).

9. NAVIGATION AIDS AND FACILITIES. All applicable navigation aids and facilities were operational (TAB W-6).

10. WEATHER. Forecast weather for 5:00 pm EST was 47 degrees Fahrenheit temperature, minus 130 feet pressure altitude, 20 percent relative humidity, 25,000 feet to 28,000 feet AGL thin scattered clouds with seven nautical miles visibility. Sunset was at 5:15pm EST, moonrise was at 1:20pm EST, and moonset was at 3:09am EST with 77 percent illumination (TAB W). Pilot testimony reveals weather was clear with unrestricted visibility (TAB V-3).

11. DIRECTIVES AND PUBLICATIONS.

a. Publications and directives applicable to the mishap:

(1) AFR 50-23, Enlisted Specialty Training

(2) AFR 51-37, Instrument Flying

(3) AFR 60-1, General Flight Rules

(4) AFR 60-16, Flight Rules

(5) TACM 51-50, Tactical Aircrew Training

(6) TACR 55-116, F-16 Pilot Operational Procedures

(7) T.O. 1F-16CG-1, Flight Manual

(8) T.O. 1F-16CG-1CL-1, Flight Manual Checklist

(9) T.O. 1F-16CG-2-70FI-00-21, Fault Isolation, Power Plant, Model F100-PW-220

(10) T.O. 1F-16CG-2-12JG-00-1, Job Guide, Servicing

(11) T.O. 1F-16CG-6WC-1, Combined Pre-flight/Postflight, End-of-Runway, Thruflight, Launch and Recovery, Quick Turnaround, Basic Postflight, and Walkaround Before First Flight of Day Inspection Workcards

(12) F100-PW-220, Engine Monitoring System Reference Guide, 2.5.1/2.5.2 DEEC, 2.1.0 EDU, December 6, 1991, United Technologies, Pratt and Whitney

b. Deviations from T.O. 1F-16CG-2-70FI-00-21 and T.O. 1F-16CG-6WC-1 by maintenance personnel were thoroughly discussed in paragraph 6b, Maintenance Personnel and Maintenance Supervision. No other known or suspected deviations from directives or publications were noted.

Robert J Scully

ROBERT J. SCULLY, Lt Col, USAF
AFR 110-14 Accident Investigation Officer

1 Atch
Glossary

GLOSSARY

NOTE: Acronyms, jargon and terms are explained in the context in which they appear in this report. These definitions are not meant to be overly technical, may not be universal and may be limited to this report.

ITEM	EXPLANATION
Advisory Fault	A non-critical maintenance condition which should be corrected at the first opportunity. The severity of the problem is not sufficient to endanger the aircraft's ability to perform its mission.
AFM	Air Force Manual.
AFR	Air Force Regulation.
Afterburner	"Selecting Afterburner". The process of selecting maximum power that the engine can produce.
AMRAAM	Advanced Medium Range Air-to-Air Missile.
Angle of Attack	The angle between the relative wind and the aircraft longitudinal axis.
Bingo	A predetermined minimum fuel state at which pilots return to the base of intended landing.
BIT Ball	Visual fault indicator on the aircraft under door 2317. The magnetized bead indicates black when no fault is detected. When tripped, the bead indicates white, showing the presence of a fault.
Block 42	Newer version of the F-16 aircraft.
"Cann-Bird"	Cannibalization aircraft; aircraft parts are taken from the Cann-Bird to fix other aircraft.
CAPs	Critical Action Procedures . The pilot must be able to immediately accomplish these procedures, in published sequence, without reference to the checklist.
Crew Rest	The amount of rest a pilot is required by AFR 60-1, before a duty day involving flying.
Dash-One	Technical Order 1F-16CG-1, The Flight Manual for the F-16.
Dedicated Crew Chief	The person assigned to, and responsible for maintaining a particular aircraft.
DEEC	Digital Electronic Engine Control. The brains of the engine control system.

ITEM	EXPLANATION
DCU	Data Collection Unit; reads, stores, transfers and erases data from the Engine Diagnostic Unit (EDU).
EAU	Engine Analyzer Unit; reads and erases data from the Engine Diagnostic Unit (EDU). Performs real-time read of data in the EDU and Digital Electronic Engine Control with the engine running. Cannot store or transfer EDU data.
EDU	Engine Diagnostic Unit; stores EDU events/ faults, DEEC faults, system faults, and EDU advisory codes.
EOR	End-of-Runway.
EPU	Emergency Power Unit.
EST	Eastern Standard Time.
ETIC	Estimated Time in Completion.
Expediter	One of four personnel responsible for flightline maintenance and sortie production in his/her Air Force specialty; e.g. Weapons, Specialist, Airplane General.
Fault Code	Four digit code from EDU or DEEC via the DCU or EAU. Tells what general problem the engine has.
FCIF	"Flight Crew Information File". A read file each pilot must read and sign-off before flying.
F-16 C/D	F-16 aircraft. C denotes one seat. D denotes two seats.
FI	Fault isolation; a series of technical orders with troubleshooting maintenance trees.
Flight Lead	The pilot responsible for leading a group (2/4 Ship) of 2 or 4 F-16's during a mission.
FTIT	Fan turbine inlet temperature.
Guard/282.8	"Guard" is the UHF Radio Frequency 243.0. It is used for emergencies and can be monitored by everyone with a UHF radio. 282.8 is an alternate search and rescue UHF frequency.
Ground Abort	Abort of a sortie before takeoff.
JFS	Jet fuel starter.
JG	Job guide; a series of technical orders with summarized procedures.

ITEM	EXPLANATION
JOAP	Joint Oil Analysis Program.
KCAS	Knots calibrated airspeed.
KIAS	Knots indicated airspeed.
MFL	Maintenance fault list; a series of numerical codes indicating a malfunction in a particular system. Determined by maintenance personnel.
MP	Mishap Pilot
MOA	Military Operating Area.
MSL	Mean Sea Level.
NM	Nautical Miles.
NOTAMS	Notice(s) To Airmen. A notice containing information on establishment, condition or change in an aeronautical facility, service, or procedure that may be a hazard to flight.
P-1	Production Superintendent; senior ranking Noncommissioned Officer-in-Charge of the sortie production and maintenance effort.
PFL	Pilot fault list; a series of numerical codes indicating a malfunction in a particular system. Determined by the pilot or maintenance personnel.
Power Distribution Check	A maintenance procedure required when working with the battery/battery charger.
PPH	Pounds Per Hour.
Red Ball	Short notice maintenance required immediately prior to takeoff.
Red X	Maintenance is required on jet and it's not allowed to fly until complied with.
RPM	Revolutions Per Minute.
RTB	Return to Base.
RTU	Replacement Training Unit.

ITEM	EXPLANATION
SAR	Search and Rescue.
-70FI	Abbreviated term used for Technical Order 1F-16CG-2-70FI-00-21; also used is -70FI-00-21.
7-Level	Level of experience required to be able to sign-off a Red X.
SID	Standard Instrument Departure.
SOF	Supervisor of flying. The F-16 pilot who is located in the control tower and oversees flying operations.
Sortie	One aircraft mission involving flight.
Spare Aircraft	Jet used when the scheduled one ground aborts or cannot be used.
Stores Jettison	To jettison from the aircraft all stores that are attached and carted.
System Fault	Intended to advise the maintenance organization that a control system problem has occurred that requires troubleshooting. Identified by both the DEEC and EDU. System faults generally isolate the problem to a specific hardware group.
TACR	Tactical Air Command Regulation.
Telelight Panel	A panel in the cockpit that displays fault indications of the various systems.
T.O.	Technical Order.
UPT	Undergraduate Pilot Training.
WC	Workcard; series of technical orders with summarized procedures.
Wing DO	The Wing Deputy Commander for Operations.
Zoom	Trading excess airspeed for altitude in order to have more time or glide distance available during an airstart.

NUCLEAR REGULATORY COMMISSION

Docket No. _____ Official Exh. No. 4

In the matter of PFS

Staff _____	IDENTIFIED L
Applicant _____	RECEIVED ✓
Intervenor _____	REJECTED _____
Other Joint	WITHDRAWN _____
DATE 4-11-02	Witness _____
Clerk L. Shindurling	

DOCKETED
USNRC

2003 FEB 25 PM 2:30

OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF