

AIRCRAFT ACCIDENT INVESTIGATION REPORT



DOCKETED
USNRC

2003 JAN 15 PM 3: 39

OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

F-16C SN 89-2069

ASSIGNED TO

343RD WING (PACAF)

EIELSON AIR FORCE BASE, ALASKA

18 MAY 1993

*342-96-100
17-40-17-2-6*

CONDUCTED IN ACCORDANCE WITH AFR 110-14

APPOINTING AUTHORITY:
ROBERT L. RUTHERFORD
General, USAF
Commander, PACAF
Hickam AFB, HI 96853-5420

SUBMITTED BY:
MICHAEL L. GENTRUP
Colonel, USAF
Deputy Commander
3rd Operations Group
Elmendorf AFB, AK 99506-2830

PFS Exh. 151

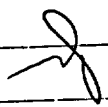
57640

VOLUME I OF II

ORIGINAL

NUCLEAR REGULATORY COMMISSION

Docket No. _____
Official Exh. No. 151
In the matter of PFS
IDENTIFIED ✓
RECEIVED ✓
Applicant ✓
INTERVIEW REJECTED
Cont'g Offr _____
Contractor _____
DATE 7/1/62
Witness _____
Reporter _____





DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES



FROM: PACAF/CC
25 E Street, Ste G214
Hickam AFB, HI 96853-5420

15 SEP 1993

SUBJ: AFR 110-14 Report of Investigation, F-16C, SN 89-2069

TO: 11 AF/CC

The subject report of investigation is approved.


ROBERT L. RUTHERFORD, General, USAF
Commander

57641

**AIRCRAFT ACCIDENT INVESTIGATION
(AND STATEMENT OF OPINION)**

CONDUCTED IN ACCORDANCE WITH AFR 110-14

**F-16C S/N 89-2069
343D WING
EIELSON AIR FORCE BASE, ALASKA 99702**

**INVESTIGATING OFFICER
COLONEL MICHAEL GENTRUP**

1. STATEMENT OF AUTHORITY AND PURPOSE

- a. Colonel Michael Gentrup was appointed investigating officer on 27 May 93 under the authority of Air Force Regulation (AFR) 110-14 "Investigation of Aircraft, Missile, and Nuclear and Space Accidents," dated 15 Dec 89, for investigation of an aircraft accident that occurred Tuesday, 18 May 93, in Yukon 1 MOA approximately 60 miles east of Eielson Air Force Base, Alaska. This mishap involved an F-16C, serial number 89-2069, assigned to the 18th Fighter Squadron, 343rd Wing (PACAF), Eielson Air Force Base, Alaska. Four technical advisors were also appointed on the same date to assist in the investigation: Major William F. Thompson, HQ 11 AF/DOX, Pilot Advisor; Captain Daryl L. Bell, 343rd WG/JA, Legal Advisor; Captain James A. Bruno, HQ 11 AF/LGM, Maintenance Advisor; and Captain (Dr) Ronald A. Nelson, 3rd Medical Center/MGAA, Flight Surgeon and Medical Advisor.
- b. The document appointing the investigating officer and technical advisors is at Tab Y. The investigation officially began 28 May 93.
- c. The purpose of this accident investigation under AFR 110-14 is to obtain and preserve evidence for claims, litigations, disciplinary and administrative actions, and for all other purposes deemed appropriate by competent authority. The accident report is not privileged and is releasable in accordance with AFR 110-14, paragraph 12.
- d. A glossary of acronyms and abbreviations is provided at Tab HH.
- e. All heading references in this document reference True North unless otherwise indicated.

2. SUMMARY OF FACTS

a. HISTORY OF FLIGHT

On 18 May 1993 at 1517 (3:17 PM) Alaska Daylight Time, US Air Force aircraft F-16C (a single seat F-16), block 40 serial number 89-2069, call sign "Stag 2", impacted the western slope of a 3253 foot hill at 64 degrees 40 minutes 27 seconds north latitude, 145 degrees 07 minutes 35 seconds west longitude beneath the Yukon MOA, fatally injuring the pilot. Stag 2 was flown by Captain Luis F. Jordan, a US Air Force pilot assigned to the 18th Fighter Squadron, 343 Operations Group, 343 Wing, Eielson Air Force Base (AFB), Alaska (Tab A). The flight was a training mission and originated at Eielson AFB at 1432 (2:32 PM). The route of flight was from Eielson AFB to approximately 16 miles north of the base, then direct to the Yukon MOA. The flight was scheduled to return to Eielson AFB. Captain Jordan was in the number 2 aircraft of a two ship flight. Engine start, taxi and takeoff were uneventful, with the exception of a conversation Captain Jordan had with the End of Runway Supervisor in which he mentioned he had a headache. Stag 2 departed Eielson Air Force Base and flew medium altitude to the Yukon MOA located east of the base. Stag 2 entered the Yukon MOA at approximately 17,000 feet. Upon entry into the MOA, Stag 1 contacted Top Rock, Ground Controlled Intercept (GCI). Stag flight had completed one engagement with the F-3 adversaries. Following the first engagement, all aircraft returned to the vicinity of their respective points with the F-16s in the northeast and the F-3s in the southwest corners of the area. On the second engagement, the F-16s pushed in a 10 mile lead trail formation with Stag 2 in trail. Following numerous drag maneuvers by the F-3s, the lead F-16 (Stag 1) aborted to reset 10 nm behind Stag 2. Stag 2 committed on the western of two groups of F-3s. Stag 2 reported a radar spike at 7 o'clock and shortly thereafter executed a hard left turn in reaction to the eastern group. Fifteen to 20 seconds after initiation of the hard left turn, Stag 2 impacted the ground on a steep slope in a nose low, wings level attitude and was destroyed. No ejection attempt was made and the pilot died on impact. The pilot of the lead F-3 flight (Courage 1) took control of the accident scene and directed participating aircraft to respond. Army, Air Force and civilian helicopters responded to the crash site. Weather conditions were good (Tab W). The aircraft was configured with one AIM-9 Air-to-Air training missile, one AMD (Acceleration Monitoring Device), two Air-to-Air missile launchers, one centerline pylon with internal empty bomb rack and 511 rounds of 20mm ammunition. Gross weight at takeoff was 26856 lbs (Tab L). The crash occurred beneath the Yukon MOA which is government owned land. The aircraft was assigned to the 18 Fighter Squadron (18 FS), 343 Operations Group (343 OG), 343 Wing (343 WG), 11th Air Force (11AF), Pacific Air Forces (PACAF). 343 Wing Public Affairs office at Eielson AFB was notified of the accident at 1531 (3:31 PM) Alaska Daylight Time. The Commander, 343 Wing, approved the initial news release at 1550 (3:50 PM) Alaska Daylight Time. HQ PACAF Public Affairs was faxed the same release at 1615 (4:15 PM) Alaska Daylight Time. The third news releases identifying the crew member was

approved at 2045 (8:45 PM) Alaska Daylight Time. 343 Wing Public Affairs office handled all news released and media involvement (Tab GG).

b. MISSION

Stag 2 was number two in a two aircraft formation of F-16s. The purpose of Stag 2's mission was to train and maintain pilot proficiency in performing Dissimilar Air Combat Training (DACT). The mission was flown in concert with a four aircraft formation of British Royal Air Force (RAF) F-3s assigned to the 43 Fighter Squadron stationed at RAF Leuchars, Scotland. The F-3 flight's call sign was "Courage" (also referred to as "Black" flight during the tactical portion of the mission) (Tabs V49-V52). During the mission, Stag flight had GCI support from "Top Rock" which was located in the Regional Operations Command Center, Elmendorf AFB.

c. BRIEFING AND PREFLIGHT

Captain Jordan departed the 18th Fighter Squadron on 17 May, prior to 1600 (4:00 PM) Alaska Daylight Time, after flying one F-16C sortie (Tab V-59). On 18 May, the day of the accident, he reported to the squadron after 0900 (9:00 AM) Alaska Daylight Time (Tab V-20). Routine 18 Fighter Squadron (FS) scheduling procedures were used to develop the weekly flying schedule for 17-21 May. The schedule was finalized the week prior to the mishap. The scheduling plan for flying in the 18th Fighter Squadron (FS) on 18 May 93 was designed as a "sortie surge" day, a method used to fly an increased number of sorties/missions per day. Sortie surges require flight leaders leading two missions flown back to back to brief both missions prior to the first mission. Captain Jordan was scheduled to fly twice in the wingman position (number two) with Captain Simonetti scheduled as the flight lead for both missions. The mishap occurred on the first mission, which was a Continuation Training mission for both pilots. The second mission was scheduled as an Air Combat Maneuver (2V1+1) Instructor Upgrade sortie for Captain Simonetti. The Coordination brief for the DACT mission with the F-3s began at 1202 (12:02 PM) Alaska Daylight Time and lasted about 20 minutes. Flight Lt. Archer conducted the briefing at the Cope Thunder building. The combined Mission Briefing was conducted by Captain Simonetti at the 18 Fighter Squadron building and began at 1230 (12:30 PM) Alaska Daylight Time. Fifteen minutes was spent on the DACT mission and 30 minutes was spent on the Instructor Upgrade mission. The briefing ended at 1315 (1:15 PM) Alaska Daylight Time and the briefed step time was 1340 (1:40 PM) Alaska Daylight Time. Engine start and ground operations were normal until End Of Runway Operations (EOR). SSgt Phillips, the EOR supervisor who was in voice communication with Captain Jordan while the EOR crew was checking his aircraft, testified that she observed Captain Jordan "wasn't sitting in a normal position in the cockpit and he just looked like he didn't feel well". When she asked him if he felt OK, he responded that he had a headache (Tab V-39).

d. FLIGHT ACTIVITY

Stag 1 flight executed a formation takeoff at 1432 (2:32 PM) Alaska Daylight Time and joined to tactical formation following the weapons systems check. The flight flew the planned Visual Flight Rules (VFR) departure to a point 16 miles north of Eielson AFB, then proceeded direct to the Yukon MOA at medium altitude. The departure and MOA entry were uneventful. The flight executed a G awareness turn shortly after entering the Yukon MOA (Tab V-24). The purpose of a G awareness turn is to mentally and physically prepare the aircrew for the upcoming high G maneuvers by practicing a G straining maneuver and assuring the anti-G garment (G-suit) works properly. Weather on departure and in the MOA was described by Stag 1 as "clear and visibility unrestricted" (Tab V-24). Stag flight established contact with Top Rock prior to accomplishing the G awareness turn. Courage flight was working with their GCI controller on a separate frequency. All scheduled aircraft were established in the MOA prior to the first engagement.

Stag flight began the first engagement from their Combat Air Patrol (CAP) point, located in the northeast corner of the Yukon working area. They pushed out in a line abreast formation towards the F-3 formation which was located in the southwest corner of the Yukon working area. The engagement consisted of a series of head-on radar missile shots by both members of Stag flight against members of Courage flight. The F-16s and F-3s did not get within visual range of each other throughout the first engagement. Stag 1 and 2 lost sight of each other during the first engagement. During the transition to the second engagement, Stag 1 directed Stag 2 to assume the trail position of an 8-10 mile lead-trail formation.

Stag flight began the second engagement from the CAP point in the northeast corner of Yukon, and proceeded on a southwest heading at medium altitude. The F-3s began the second engagement as two groups (two aircraft per group) with an east-west azimuth split. Stag 1 took two radar missile shots and turned back to a heading of 060 degrees. Stag 2 offset to a heading of approximately 275° and began descending from above 18,500 feet as he committed on the western group of F-3s. Approximately one minute prior to impact, Stag 2 reported that, based on his radar data, both groups of F-3s were heading away from him. Approximately 49 seconds prior to impact he reported he had 2700 pounds of fuel and was chasing the western group which was at low altitude. Approximately 31 seconds prior to impact, at a range of 3.6 miles from Courage 1, Stag 2 transitioned from above Courage 1's altitude to below Courage 1's altitude. This transition occurred at approximately 9,800 feet Above Ground Level (AGL). Approximately 25 seconds prior to impact, Stag 2 reported a radar spike at left, seven o'clock and shortly thereafter entered approximately an 8 G, left descending turn. From this position at Stag 2's 7 o'clock, Courage 1 simulated a radar missile shot. Courage 1 continued to pure pursuit (point at) Stag 2 until Stag 2's heading reached approximately 130°, at which time Courage 1 pulled off up, and to the right and lost

sight of Stag 2. Both crewmembers of Courage 2 had sight of Stag 2 from a distance of 3-4 miles immediately prior to impact.

Following is a transcript of radio transmissions (Tab N) of the last Engagement by Stag flight, with aircraft and agencies listed below:

<u>CALLSIGN</u>	<u>IDENTIFICATION</u>
Stag 1	Number one aircraft in Stag flight
Stag 2	Accident Aircraft
Courage 1	Number one aircraft in Courage flight
Rock	Top Rock - Ground Controlled Intercept (GCI)

<u>TIME</u>	<u>C/S</u>	<u>TRANSMISSION</u>
15:11:43	ROCK	"Both pairs cold, nearest pair is one eight zero, ten miles"
15:11:51	ROCK	"Second, two zero three, twenty six, turning hot shortly"
15:11:53	STAG	"An, one, come up air to air TACAN"
15:11:55	STAG 1	"copy"
15:12:00	ROCK	Far pair at fifteen thousand, nearest at twenty thousand"
15:12:11	STAG 2	"STAG twos, uh, contact uh, single group, uh, bull, one nine eight, nineteen, angles one seven dragging"
15:12:23	STAG 1	"STAG one hits there angles one three, cameras on"
15:12:28	ROCK	"Both pairs are crossing now you have one hot, one cold bearing two zero zero, twenty"
15:12:34	STAG 1	"STAG one contact there"
15:12:44	STAG 1	"STAG one hits on the cold pair only"
15:12:45	STAG 2	"Two samo, contact on the cold air, cold pair, angels now two zero"

15:12:51	STAG 1	"One samo"
15:12:52	STAG 2	"They look like they're climbing, angels two two now"
15:12:54	STAG 2	"STAG two, Roger"
15:12:56	ROCK	"They are now split by eight miles, nearest pair one nine zero, seventeen, azimuth two miles, twenty thousand"
15:13:09	ROCK	"Nearest pair, bulls eye one nine zero, fifteen"
15:13:20	ROCK	"Second pair is turning hot two zero zero twenty, in trail of the first by eight miles"
15:33:33	ROCK	"Leaders one eight five, ten from bulls eye"
15:13:39	STAG 1	"STAG one clean there"
15:13:41	STAG 2	"Show some manager low altitude bull one nine six, one nine one for six, angels one, dragging"
15:13:49	ROCK	"Roger, copy that's a stranger, not your target, bandits from bulls eye, one seven zero, nine, they're now beaming north"
15:13:55	STAG 2	"That low, that low group is fast mover, a fast mover, bull two zero zero, seven, angels three dragging"
15:14:03	STAG 1	"One samo"
15:14:10	ROCK	"Confirm you have contact now one, one nine zero, ten correction two zero zero, ten"
15:14:16	STAG 1	"Affirmative"
15:14:18	ROCK	"Roger, that's the front pair, they're beaming"
15:14:22	STAG 1	"Roger, showing them, uh, beaming south"
15:14:24	STAG 1	"Sec. second group bull one eight seven, nineteen, angles two two head coming hot...high low split, heads up"

15:14:33	ROCK	"Rocks the same one eight five, fifteen that pair, beaming north"
15:14:39	STAG 2	"Shows, uh, trailing group, disregard, the, uh, eastern group one eight nine, fourteen angels two two, they're coming in high hot, head"
15:14:48	STAG 1	"Fox three uh, the eastern group"
15:14:52	STAG 2	"Understand you're taking the high group"
15:14:53	STAG 1	"I got the guy angles two, low group"
15:14:55	STAG 2	"Copy, Fox three on the uh, eastern group high angles two three"
15:15:06	STAG 1	"O.K. trashed missile on the uh, eastern group he's dragging south"
15:15:10	STAG 2	"Understand low group"
15:15:11	STAG 1	"Cor, Roger, low group"
15:15:14	ROCK	"The western group still cold...western group still cold, bearing two four zero fifteen from bullseye"
15:15:22	STAG 2	"O.K. what's the high group doing, uh, bogydope on the high group"
15:15:25	ROCK	"Roger, they're recommitting, uh, through north, hot the other group, the eastern group turned cold"
15:15:31	STAG 2	"Copy, gimmi the hot group, what's bogydope on the hot group?"
15:15:35	ROCK	"Tactical two four zero, fifteen, turning right"
15:15:39	STAG 2	"Understand fifteen?"
15:15:45	STAG 2	"Got a hot group on my nose they're uh, two one six eleven angles seven high at"

15:15:47	ROCK	"Two five zero twelve...fifteen thousand, azimuth"
15:15:50	STAG 1	"Fox three on them..Fox three on the leader in the group"
15:16:01	STAG 2	"Understand si, six thousand feet?"
15:16:03	STAG 1	"That's affirm"
15:16:04	STAG 2	"Copy, there's two of them in there"
15:16:05	STAG 1	"Roger, leader is Foxed"
15:16:08	ROCK	"Ten miles,...second pair is cold, no threat"
15:16:15	STAG 1	"And spike uh, left th, left nine"
15:16:18	STAG 2	"O.K., the group looks like it's dragging the uh, ea, we, uh, western group is dragging"
15:16:23	STAG 1	"Copy, STAG one uh, pumping uh, back north"
15:16:27	STAG 2	"Copy...bogydope on the eastern group there uh, ROCK"
15:16:33	ROCK	"Two one five twenty, still cold"
15:16:36	STAG 2	"Copy, both groups showing cold, all players showing cold"
15:16:41	STAG 1	"Copy cold, one's naked,...Stag one twenty seven"
15:16:47	STAG 2	"Two is twenty seven,..chasing the uh, low group now which is the western group"
15:16:56	ROCK	"Roger the we, both groups are cold they are one from you tactical two five zero, eight cold,... the second's headed out to Mizzi, possible low"
15:17:10	STAG 2	"Spike left us, seven o'clock for one, for two"
15:17:15	STAG 2	"Is there a group there uh, ROCK?"
15:17:15	ROCK	"Roger, not seen, possible the second, the eastern group recommitting"

15:17:31 STAG 1 And two conf uh, are you cold now or hot?"

15:17:36 ROCK "Two check five o'clock, two miles"

15:17:45 STAG 1 "STAG two say your heading"

15:17:47 COURAGE 1 "Fox one kill F-16 at seven thousand feet heading one three zero"

15:17:48 ROCK "STAG one say your heading"

15:17:53 STAG 1 "STAG one is uh, northeast bound"

15:18:00 ROCK "STAG one snap two five zero"

15:18:03 STAG 1 "Copy two five zero,.. and there was a kill passed there"

15:18:11 STAG 1 "STAG two posit"

15:18:11 ROCK "Understand a kill passed?"

15:18:13 STAG 1 "That's affirm"

15:18:18 STAG 1 "And COURAGE uh, say that kill pass again please"

15:18:25 STAG 1 "Two did you copy that kill pass?"

15:18:29 STAG 1 "STAG two"

15:18:35 STAG 1 "STAG two, one uh"

15:18:37 ROCK "Tactical two four zero fifteen the fight"

15:18:43 STAG 1 "STAG two, one victor"

15:18:55 STAG 1 "STAG two, one uniform"

15:18:55 ROCK "Two two zero, twenty tactical,... turning hot strength four"

15:19:08 STAG 1 "STAG two, one uniform, victor"

15:19:13 STAG 1 "STAG two"

15:19:14	ROCK	"STAG two, ROCK radio check"
15:19:27	STAG 1	"ROCK uh, snap uh, STAG two to STAG one"
15:19:35	ROCK	"STAG one we don't have comms with STAG two"
15:19:40	STAG 1	"STAG two, one uniform"
15:19:41	ROCK	"STAG two, ROCK radio check"
15:19:47	STAG 1	"STAG two, STAG one uniform"
15:19:49	ROCK	"STAG one fight tactical,...two one zero eight
15:20:06	STAG 1	"Fight now one six zero, four,...high aspect"
15:20:20	STAG 1	"STAG two"
15:20:26	STAG 1	"STAG two, STAG one uniform"
15:20:28	ROCK	"One fights so uh, correction one five zero, two miles...ten thousand"
15:20:38	STAG 1	"OK ROCK I've got a contact on my nose two miles low altitude heading southbound,...ID"
15:20:46	ROCK	"I show you merged in the fight now"
15:20:50	STAG 1	"Roger, how many are there here?"
15:20:52	ROCK	"Strength four in there with possibly STAG two engaging as well"
15:21:04	ROCK	"One we have a turning fight left you've merged now with three F-3s"
15:21:18	STAG 1	"And uh, Fox II kill uh, the bandit southbound at uh, angels one"
15:21:22	ROCK	"STAG one terminate, terminate"
15:21:24	STAG 1	"STAG copys terminate, STAG one terminate"

15:21:28	STAG 1	"STAG two posit"
15:21:29	ROCK	"STAG one do you have comms with STAG two?"
15:21:31	STAG 1	"Yea, I haven't heard from him in a while uh, uh, he must be having some trouble with his radio or something"
15:31:40	ROCK	"Uh, I have a possibility that he's gone down too, bearing two five zero, ten, are you getting any uh, indication?"

e. IMPACT

Stag 2 impacted at 64 degrees 40 minutes 27 seconds north latitude and 145 degrees 07 minutes 35 seconds west longitude at an elevation of 2500 feet on the western slope of a 3253 foot hill on 18 May 93 at 1517 (3:17 PM) Alaska Daylight Time (Tabs A and R-1). The impact occurred on land administered by the State of Alaska. All wreckage was confined to this State property (Tab P). The F-16 aircraft was destroyed on impact. The pilot of the aircraft was fatally injured in the mishap. The impact angle was 43 degrees to the face of an 18 degree upslope, based on analysis of the impact crater (Tab R-1). Analysis of the impact crater determined the aircraft was wings level at impact (Tabs A and R-3) Flight instruments recovered from the mishap indicated the aircraft heading was 207.5 degrees (Tab CC-2). Analysis of the impact crater suggested the heading was 166-190 degrees at impact (Tab R-3). The Life Sciences Equipment Laboratory at Kelly AFB, TX analyzed several components of the pilot's life support equipment recovered from the mishap scene. The physical evidence and results of tests conducted on the recovered equipment allowed the following conclusions. (Tab DD-3).

First, at impact, the pilot was attired in his full complement of life support gear with all necessary attachments to the ejection seat and parachute secure. There is no evidence of a failure in life support equipment. Second, there is no evidence of birdstrike or fire in the cockpit prior to impact. Third, at impact, Captain Jordan was operating the aircraft in a standard flight control posture and no attempt at ejection was made. Physical evidence suggested Captain Jordan's feet were on the rudder pedals, hands were on the flight controls and torso faced forward at the time of impact. Finally, there is no evidence of aircrew incapacitation immediately prior to impact.

The exhibits examined by the Life Science Equipment Laboratory demonstrated no

evidence of life support equipment failures or maintenance discrepancies. The aircraft escape system and life support equipment were operational until their design capabilities were exceeded at impact. Damage patterns created on the life support equipment by the impact forces showed the aircraft was in an upright attitude at an intermediate speed of 400 to 500 Knots Indicated Airspeed (KIAS) at the time of impact.

f. EJECTION SEATS

Aircraft 89-2069, a single place F-16C, was equipped with an Advanced Concept Ejection Seat (ACES II). The ejection seat was totally fragmented and scattered throughout the aircraft wreckage.

The escape system components recovered were subject to post crash analysis. The inertia reel cartridge was unfired and the inertia reel had no input. Two DTA (Detonation Transfer Assembly) initiators were backfired by the canopy jettison initiator. The seat drogue cutters, drogue gun cartridge, and one canopy jettison initiator were unfired. The seat rocket catapult was ruptured from ground impact (Tab J-1).

The Escape Systems Safety Manager at Norton AFB, CA, determined: "The condition of system components recovered for analysis show a pattern of collision with the ground before initiation. The unfired inertia reel cartridge and the backfired DTA initiators confirmed that the JAU-8 initiators (starts the sequence) were not fired before ground impact" (Tab J-1).

g. PERSONAL AND SURVIVAL EQUIPMENT

The required inspections on Captain Jordan's helmet, oxygen mask, torso harness, survival vest, and two anti-G garments were current on the day of the mishap. Training records of 18 FS Life Support personnel demonstrated their qualifications to perform these inspections. The survival equipment recovered at the mishap site showed significant damage occurred during impact. There was no evidence any survival equipment was used following impact. ACES II ejection seat parachute inspections for tail number 89-2069 were also up to date. Inspections of the ejection seat survival kit, including life raft and medical kit, were current. Parachute recovered from the mishap site showed it was not deployed prior to ground impact.

h. RESCUE

Stag 2 impacted the ground at 1517 hours (3:17 PM) Alaska Daylight Savings Time on 18 May 93. Both RAF crewmembers of Courage 2 indicated they had visual contact with Stag 2 at the moment of impact (Tabs V-50 and V-52). No ejection attempt or parachute was seen. The pilot of Courage 2 immediately called for termination of the training engagement and informed Courage 1 of the F-16's impact into the hill (Tabs

V-50 and V-52). Courage 1 then declared an emergency on their working frequency with their GCI controller in the ROCC at Elmendorf AFB (Tab V-51). This call to Top Rock occurred immediately following Courage 2's initial radio call. On or about the same time, the GCI controller for Stag flight at the ROCC noted loss of radio communication with Stag 2 (Tabs N and FF-5). Multiple radio checks by Stag 1 and Top Rock proved ineffective at reaching Stag 2 (Tab N-3). After the Courage flight controllers informed Stag flight's controller of the downed F-16, Top Rock advised Stag 1 to change radio frequencies and begin coordination of the Search and Rescue (SAR) effort with Courage 1 at 1523 (3:23 PM) Alaska Daylight Time (Tab FF-6).

EVAC 271, a US Army UH-1 Medivac helicopter from the 283rd Medical Detachment, arrived at the mishap site prior to 1700 (5:00 PM) Alaska Daylight Time after being launched from Fort Wainwright, Alaska, and began an aerial search of the area (Tab V-54). The Supervisor of Flying (SOF) logbook reported the helicopter was on the ground at the mishap site at 1700 (5:00 PM) Alaska Daylight Time (Tab FF-2). Testimony indicated the helicopter landed uphill from the mishap site, then the crew chief and the Emergency Medical Technician (EMT) proceeded to the site on foot (Tabs V-54, V-55 and V-56). By 1720 (5:20 PM) Alaska Daylight Time, the EMT had located remains and determined there were no survivors (Tabs V-56, FF-2 and FF-7).

i. CRASH RESPONSE

Courage 1 assumed on scene commander duties immediately following notification of the F-16 impact from Courage 2. Courage 1 first placed the terminate call to Top Rock at Elmendorf AFB, then notified the Supervisor of Flying (SOF) at Eielson AFB. He directed Courage 3 and Courage 4 to return to Eielson to help coordinate the rescue efforts with the SOF (Tab V-49). The SOF immediately notified the Eielson AFB Command Post and diverted Angry, a flight of 2 OA-10s, and Bones, a single ship OA-10, to the mishap site from their training flights (Tabs V-13, V-14 and V-15). Stag 1 joined Courage 1 in an orbit at 15,000 feet above the mishap site approximately ten minutes after the F-16 impact (Tab V-49). Angry 1, flying an Instructor Pilot upgrade sortie in the OA-10, received the information about the downed F-16 from the SOF about 1530 (3:30 PM) Alaska Daylight Time and relayed it to Angry 2, who assumed lead of Angry and Bones flight because of his prior training and qualification in Search and Rescue (SAR) missions (Tabs V-13 and V-14). Angry 2 became on scene commander upon his arrival to the mishap scene at approximately 1540 (3:40 PM) Alaska Daylight Time, thereby relieving Courage 1. He directed Bones to serve as a radio relay with the SOF in an orbit 12,000 feet above the mishap site, while he and Courage 1 flew over the mishap site at low level (Tab V-13). Both Courage 1 and Stag 1 departed the mishap scene shortly after Angry 1's arrival due to low fuel considerations. Also because of low fuel considerations, Bones coordinated the launch

of another OA-10 from Eielson to relieve the three OA-10 already on station with the SOF (Tab V-15). This aircraft, callsign Rustic 1, became airborne at 1650 (4:50 PM) Alaska Daylight Time and proceeded to the mishap site (Tab FF-1). Angry 2 remained on scene commander until the arrival at 1700 (5:00 PM) Alaska Daylight Time of Rescue 102, an HC-130 from the 210th Air Rescue Squadron at Kulis Air National Guard Base (ANGB) near Anchorage, and Rustic 1, the OA-10 launched from Eielson. Angry and Bones flights then returned to Eielson AFB, landing at 1715 (5:15 PM) Alaska Daylight Time (Tab FF-2). The HC-130, diverted while airborne from a medical evacuation mission, assumed on scene commander duties from 1700 (5:00 PM) Alaska Daylight Time until 1830 (6:30 PM) Alaska Daylight Time, when low fuel forced a return to Anchorage.

Meanwhile, the Eielson AFB Command Post convened the Battle Staff, notified the RCC (Rescue Coordination Center) at Elmendorf AFB near Anchorage, and initiated formation of the mishap response team from Eielson immediately after notification from the SOF. Members of the Battle Staff arrived in the command post within minutes after notification and the initial response team of Air Force personnel, including a flight surgeon and a survival instructor, was designated. In addition to the 343d Wing Command Post message, the RCC at Elmendorf was notified by the GCI controllers in the ROCC at 1530 (3:30 PM) Alaska Daylight Time (Tab FF-4). The RCC immediately diverted the HC-130 aircraft already airborne and launched an MH-60 helicopter from the 210th Air Rescue Squadron at Kulis ANGB near Anchorage. An E-3 Sentry Airborne Warning and Control System (AWACS) aircraft was also diverted by the RCC towards Eielson to monitor the search and rescue effort. The E-3 AWACS primarily served as a radio relay and maintained radar contact with all aircraft in the search and rescue effort. The RCC also coordinated with the 283rd Medical detachment at Fort Wainwright near Fairbanks for UH-1 medivac helicopter support to the search and rescue effort (Tab FF-7).

The 283rd Medical Detachment at Fort Wainwright launched EVAC 271, a UH-1 helicopter with an EMT on board, at 1553 (3:53 PM) Alaska Daylight Time (Tab FF-11). Testimony indicated the helicopter was initially directed to proceed to Eielson to pick up the flight surgeon and the Air Force response team, but was diverted straight to the mishap coordinates once airborne (Tab V-54). Another UH-1 helicopter was diverted to Eielson instead to pick up the flight surgeon. After EVAC 271 arrived at the mishap scene at about 1700, the on-scene-commander aboard the HC-130 directed the helicopter towards the mishap site. After identifying a burning tree in the area, the UH-1 identified the mishap crater and landed uphill from the site, with engine shutdown at 1716 (5:16 PM) Alaska Daylight Time (Tab FF-11). By 1720, the medical technician and crew chief had reached the site and identified human remains (Tabs V-56, FF-2 and FF-7).

Another UH-1 medical evacuation helicopter, callsign EVAC 16554, was conducting a

training mission south of Fort Wainwright when notified of the downed F-16. This helicopter was diverted from their training to return to Fort Wainwright, pick up equipment, and then proceed to Eielson AFB to meet the waiting flight surgeon. This helicopter departed Fort Wainwright after taking on the necessary equipment at 1631 (4:31 PM) Alaska Daylight Time (Tab FF-9). After the approximately fifteen minute flight to Eielson and ten minutes of ground time to onload, EVAC 16554 departed Eielson just prior to 1700 (5:00 PM) Alaska Daylight Time with the USAF flight surgeon and survival instructor on board (Tabs V-25, V-53 and FF-9). The helicopter reached the mishap scene and landed at about 1740 (5:40 PM) Alaska Daylight Time (Tab FF-9). The flight surgeon, survival instructor, helicopter crew chief, and helicopter medical technician proceeded to the impact site on foot. By 1810 (6:10 PM) Alaska Daylight Time, the flight surgeon confirmed there were no survivors (Tabs V-25 and F-7). The 343d Support Group Commander reached the mishap scene at approximately 1900 (7:00 PM) Alaska Daylight Time in a civilian helicopter under contract to the Air Force according to testimony (Tab V-25). He directed EVAC 271 and the flight surgeon aboard EVAC 16554 to return to base shortly after arrival (Tab V-25). Security police were transported to the site and remained overnight to secure the mishap scene. The investigation of the mishap commenced the next morning (Tabs V-6 and V-25).

j. MAINTENANCE DOCUMENTATION

F-16C serial number 89-2069, a Combat Coded fighter aircraft, was accepted by the U.S. Air Force on 31 Oct 90 at General Dynamics Corporation-Ft. Worth Division, Ft. Worth, TX, and delivered to Moody AFB, GA. The aircraft was assigned to Eielson AFB, AK, on 21 Oct 91. At the time of the accident, it had accrued a total of 599.1 airframe flight hours (not including the accident sortie) (Tab D).

All required Time Compliance Technical Orders (TCTO) due to be accomplished prior to 18 May 93 were completed (Tab U-1).

Documentation indicates all scheduled inspections/maintenance were accomplished (Tab U-2) with the exception of a 180 day inspection of the aircraft's Liquid Oxygen (LOX) bottle #7200 due on 16 Apr 93 as indicated on the Air Force Technical Order (AFTO) Form 781K (Tab U-3); however, a computer generated record of maintenance performed on LOX bottle #7200 from the Core Automated Maintenance System (CAMS) shows the inspection had been complied with on 16 Apr 93 (Tab U-4).

A review of the Oil Analysis Record for engine serial number GE-E545214 indicated no discrepancies. Engine oil samples were taken from the first two flights of the day preceding the accident sortie on 18 May 93 and were within standards (Tab U-5).

A review of aircraft records indicated all Time Change Requirements were completed

and current (Tab U-2).

The Equipment Review Report indicates all component inspections were completed and current (Tab U-6).

A 600 hour #4 phase inspection for aircraft 89-2069 began on 23 Apr 93, was completed on 28 Apr 93, and the aircraft accepted after the phase by the Maintenance Production Superintendent on 30 Apr 93 at an aircraft time of 593.6 hours (Tab U-7). The Dedicated Crew Chief and Assistant Crew Chief both testified the phase inspection went well (Tab V-37 and V-44). Aircraft 89-2069 had flown a total of 5.5 hours and 5 sorties (not including the accident sortie) since the last scheduled inspection. Four sorties were Code 1 and one sortie was Code 3 (Tab U-8 and U-9). The following discrepancy resulted from the Code 3 sortie on 14 May 93:

DISCREPANCY	CORRECTIVE ACTION
Code 3, AB (afterburner) no light at 30,000 ft, 220 KIAS (knots indicated airspeed)	Cleaned flame sensor and R+R (removed and replaced) augmentor ignition lead

Aircraft 89-2069 was scheduled for a jet fuel starter (JFS) change and utilized for Field Training Detachment (FTD) engine installation class from 11-14 May 93 (Tab U-10) in conjunction with a scheduled engine TCTO, 2J-F110-643 radiographic inspection/replace turbine frame oil tube wrench bracket (Tab U-11). The original engine, serial number 545286, was removed on 11 May 93 and a different engine, serial number 545214, was installed and signed off in the aircraft AFTO Form 781A on 13 May 93 (Tab U-12). Quality Assurance (QA) inspected the engine and engine bay prior to installation and the engine after installation with no defects noted (Tab U-13). Both the FTD Instructor and Dedicated Crew Chief (attending class as a student) testified the engine removal and installation went smoothly (Tab V-33 and V-37). On 14 May 93, aircraft 89-2069 flew a required Functional Check Flight (FCF) for the engine change and did not release (Tab U-14) due to an AB no light at 30,000 feet, 220 KIAS (Tab U-15). Corrective action was to clean the flame sensor and remove and replace the augmentor (afterburner) ignition lead which was accomplished on 14 May 93 and operationally checked good (Tab U-15 and U-16). A second FCF was flown on 17 May 93 and the aircraft was released for flight at 1630 hours (4:30 PM) Alaska Daylight Time (Tab U-17).

k. MAINTENANCE PERSONNEL AND SUPERVISION

Supervision and training of individuals involved in the maintenance performed on aircraft 89-2069 from pre-flight inspection on 17 May 93 and quick turn inspections on 18 May 93 through the End of Runway (EOR) inspection for the accident flight revealed no deficiencies. Individuals were qualified for the work they accomplished as reflected

in their AF Forms 623, On-the-Job Training Record.

I. ENGINE, FUEL, HYDRAULIC, and OIL INSPECTION ANALYSIS

General Electric F110-GE100 turbofan engine, serial number GE-E545214, was installed in aircraft 89-2069 on 13 May 93. All inspections, time change requirements, and Time Compliance Technical Orders were met (Tab U-18).

The Oil Analysis Record for engine serial number GE-E545214, from 16 Nov 92 to the day of the accident, was reviewed with no discrepancies noted (Tab U-5). The engine was placed in a Code C status for ten hours on 4 May 93 (prior to installation in aircraft 89-2069) due to the oil tank and numbers 2, 3, 4, and 5 bearings being replaced (Tab U-19). Code C status requires an oil sample after each flight, for the stated number of hours, to establish a new oil analysis trend (Tab U-20).

Fuel samples were taken from bulk fuel tank #49 and the hot pit pantograph nozzle from Charlie 10 row (Tab U-21), the last refueling point for aircraft 89-2069 (Tab U-22). The sample from tank #49 was sent to the USAF Aerospace Fuels Laboratory in Mukilteo, WA, for analysis. No discrepancies were found (Tab U-23).

Liquid Oxygen (LOX) samples were taken from the bulk storage tank TK 1, but no sample was obtained from LOX servicing cart #LX-9, the LOX cart used the evening of 17 May 93 to service aircraft 89-2069s LOX bottle (Tab U-24), since the cart was allowed to go empty and was returned to the shop for purging. A LOX sample was obtained from aircraft convertor (bottle) A/C Conv 745, a LOX bottle on another aircraft that was also serviced by LOX cart LX-9 the night before. Samples were sent to the USAF Aerospace Laboratory for analysis. Sample TK 1 tested normal (Tab U-25) but A/C Conv 745 failed specification requirements for methane. The Chief, Aerospace Fuels Laboratory, Directorate of Aerospace Fuels, Det 35, SA-ALC/SFTLD in Mukilteo, WA, stated: "Material represented by this sample fails specification requirements for methane; however meets emergency use limit and is satisfactory for Air Force Use" (Tab U-26).

An oil sample was taken from oil servicing cart OC-7 and results indicated no discrepancies. Samples were taken and analyzed from hydraulic servicing carts HC-2, -3, -4, -5, -6, and -7. All samples indicated normal except HC-6 which was retested two additional times since the first sample indicated high zinc (Tab U-27). The retests indicate a lower amount of zinc than the original but still a higher amount than the other five samples. The 343 Maintenance Squadron Aerospace Ground Equipment (AGE) Flight Chief testified that HC-6 is set up for aircraft strut servicing only; the cart is stenciled "for strut use only" on four sides and the fittings (connectors) on the hoses are different than the other hydraulic carts to preclude using this cart for the aircraft hydraulic system (Tab V-30).

m. AIRFRAME AND AIRCRAFT SYSTEMS

The launch crew chief, launch assistant, End of Runway (EOR) supervisor, EOR crew chief, and EOR weapons technician all testified that there were no aircraft problems encountered throughout the launch and EOR inspection of aircraft 89-2069 just before take-off (Tab V-44, 46, 39, 45, and 41).

A complete analysis of aircraft systems could not be made due to the extensive damage to the aircraft upon impact. Most mechanical actuation components of the flight control surfaces were recovered. The following primary flight control Integrated Servo Actuators (ISA) were analyzed by Ogden Air Logistics Center, OO-ALC/LAAT, Hill AFB, UT, with flight control surface displacement as indicated (Tab J-2):

COMPONENT	INDICATED DISPLACEMENT
1. Rudder ISA	2 degrees trailing edge left
2. Left Horizontal Tail ISA	4 degrees trailing edge up
3. Right Horizontal Tail ISA	5 degrees trailing edge up
4. Left Flaperon ISA	1 degree trailing edge up
5. Right Flaperon ISA	2 degrees trailing edge down

The Aerospace Engineer, F-16 Program Office, ASC/YPE, Wright Patterson AFB, OH, estimates the aircraft was experiencing about 4.6 "Gs" normal acceleration at impact (Tab CC-1).

Only three of the eight Leading Edge Flap Rotary Actuators were recovered. Analysis indicated a deflection of 5 degrees from streamline for the leading edge flaps.

The fuel system components recovered were severely damaged and no indications were obtained. The Jet Fuel Starter (JFS) accumulators were recovered but due to the damage no measurements were obtained. Hydraulic system flight control accumulators were recovered and impact marks on the external cylinder and one captured piston indicate mid stroke for the piston. The Emergency Power Unit (EPU) was not recovered; however, the EPU catalyst bed was subsequently discovered in the returned aircraft wreckage. A statement from 343 WG fuel shop personnel indicate that the EPU had not fired (Tab V-58). The F-16 Equipment Specialist, OO-ALC/LAAT, Hill AFB, UT, determined: "...there were no abnormalities apparent in the flight control or hydraulic systems of the mishap aircraft at impact. The ISAs analyzed had different displacements indicating electrical and hydraulic power were present" (Tab J-2).

The engine was destroyed with all major sections highly fragmented. Results of the analysis at Oklahoma Air Logistics Center, OC-ALC/LPARA, Tinker AFB, OK, estimated

power at time of impact to be: "...40 percent fan RPM and 70 percent core RPM. This indicates that the engine was operating at idle power when impact occurred" (Tab J-3).

An analysis was conducted at Oklahoma City Air Logistics Center, OC-ALC/LIINT, Tinker AFB, OK, on the aircraft Horizontal Situation Indicator (HSI), the only cockpit instrument recovered from the accident. The Chief, Technical Services Section, Avionics Branch determined: "Damage to the drive gear teeth corresponds to an HSI compass card reading of 180 degrees Magnetic (207.5 degrees true) at the time of impact" (Tab CC-2).

No data was obtained from the Crash Survivable Flight Data Recorder due to severe damage to the memory chips (Tab BB).

n. OPERATIONAL PERSONNEL AND SUPERVISION

The 18th Fighter Squadron is tasked by Headquarters Pacific Air Forces (PACAF) to maintain a Designated Operational Capability (DOC) of Close Air Support and a tertiary DOC of Air Superiority (Air-to-Air). Captain Jordan was authorized to fly Air-to-Air on the mishap flight by the 18th Fighter Squadron Operations Officer and acting Squadron Commander. The authorization was documented on Local Form 170, Local Flight Authorization/Flight Plan on 17 May 93 (Tab K). The flight was filed on a VFR flight plan.

The coordination brief was conducted by FL Archer who used the Cope Thunder briefing guide and visual aids. He followed the air-to-air briefing outline from Multi Command Regulation 55-79, PACAF Chapter 7, Atch 1 which omitted the termination criteria for a defending aircraft with a descending flight path in the low altitude arena (V-24). The mission brief was conducted by Capt Simonetti using a combination of the squadron standard briefing guide and a personal briefing guide. No supervisory personnel attended the flight briefing.

o. AIRCREW QUALIFICATIONS

Captain Jordan received his United States Air Force Commission following graduation from the University of Southern California in 1982, then completed Undergraduate Pilot Training on 11 Oct 83 at Vance AFB, OK. He finished Lead-In Fighter Training at Holloman AFB, NM, as a Distinguished Graduate on 27 Jan 84 prior to entering F-16 training at MacDill AFB, FL. He accepted his first operational assignment in the F-16 on 21 Aug 84 at Torrejon AB, Spain. He upgraded to Instructor Pilot (IP) in 1987 while stationed there. In 1988, Captain Jordan graduated from the Fighter Weapons Instructor Course (FWIC) at Nellis AFB, NV, then completed a three year tour as an F-16C Instructor Pilot at MacDill AFB, FL. He arrived at Eielson AFB, AK, for an assignment to the 18th Fighter Squadron on 7 Jun 91. Testimony indicated Captain Jordan was handpicked for this assignment as one of the initial cadre of instructor pilots

in the 18 FS during their transition from the A-10 to the F-16C (Tab V-6). He was certified as Mission Ready (MR) by the 18 FS on 3 Oct 91.

Captain Jordan was a Senior Pilot with 2455.7 total military flying hours, including the 0.9 hours of the mishap sortie. He logged 2249.2 total hours in the F-16 with 1263.7 hours as an F-16 Instructor Pilot. The F-16C was designated his primary aircraft. His duty Air Force Specialty Code (AFSC) was S1115Q. His Aviation Service Date was 3 Nov 82 and Aviation Service Code was 1A on Aeronautical Order 1034 dated 1 Dec 83. Captain Jordan received his Senior Pilot rating on Aeronautical Order 0021 dated 11 Oct 90. His F-16 currency was as follows:

	<u>F-16C/D sorties</u>	<u>Flight Time</u>
Last 30 days	15	23.0
Last 60 days	23	34.5
Last 90 days	42	65.6

Captain Jordan's recent air-to-air combat training included one 1.2 hour sortie on the day prior to the mishap, when he served as Instructor Pilot for another 18FS pilot in Flight Lead Upgrade training in (Tabs G-3 , V-9, V-10 and GG-3). Prior to this sortie on 17 May 93, Captain Jordan flew air-to-air sorties on 18 Mar 93 and 15 Mar 93. On 15 Mar 93, he logged one sortie of 1.1 hours in Air Combat Training (ACBT), specifically an ACT 2vX sortie (Tabs G-3 and GG-5). On 18 Mar 93, Captain Jordan logged 3 Basic Fighter Maneuver (BFM) sorties for a total of 2.0 hours (Tabs G-3 and GG-4).

His latest tactical check flight in the F-16C was on 14 Jan 93 and he received a grade of "Qualified". Captain Jordan received an "Exceptionally Qualified" grade on his instrument check flight on 22 Mar 93 (Tabs V-28 and GG-1). He completed Arctic Survival Training on 20 Mar 92 at Eielson AFB, AK. His Emergency Egress Training and Hanging Harness Training were valid until 31 Jul 93. In addition, Captain Jordan's Water Survival and Chemical Warfare Training were current on the day of the mishap. Captain Jordan completed centrifuge training on 5 Nov 85 at Soesterberg AB, The Netherlands. He underwent initial physiological training at Vance AFB, OK, on 9 May 83 during Undergraduate Pilot Training. His most recent physiological training refresher was 5 Feb 92 and was current until 28 Feb 95 (Tab DD-2)

p. MEDICAL

Review of Captain Jordan's medical record indicated he was fully qualified for flying duties on the day of the mishap. His last Flying Class II medical examination, completed on 19 Oct 92, demonstrated no disqualifying defects. This physical examination clearance would have expired on 31 Oct 93. His latest AF 1042, Medical Recommendation for Flying Duty, was signed on 29 Mar 93 during his initial clearance for flying at Luke AFB, AZ during temporary duty there and indicated he was medically cleared for flying duty. Dental records indicated he was Dental Class I, fully qualified for flying duty, on 3 May 93.

Major (Dr.) John C. Moad performed the autopsy on the remains at Bassett Army Community Hospital, Fort Wainwright, Alaska, on 19-21 May 93. Positive identification of Captain Jordan's remains was established by personal identification statements provided by Air Force personnel who launched Captain Jordan from Eielson AFB as pilot of tail number 89-2069 and by the pilot in verbal contact with Captain Jordan throughout the flight prior to the mishap. Cause of death was blunt force trauma secondary to F-16 aircraft accident (Tab X). Death was instantaneous. Toxicology tests performed on the remains at the Armed Forces Institute of Pathology, Washington, D. C., demonstrated no evidence of alcohol or drugs present at the time of the mishap (Tab DD-1). Further, eyewitnesses reported Captain Jordan demonstrated no behavior consistent with use of alcohol or drugs prior to the mishap flight (Tabs V-7 and V-24). The recovered remains did not permit control surface injury analysis.

Testimony from the End-of-Runway supervisor indicated Captain Jordan described a headache prior to take-off on the mishap flight (Tab V-39). Further testimony indicated Captain Jordan did not typically suffer headaches or consume pain relievers (Tabs V-3, V-9, V-11, V-20, V-22 and V-24). 18 FS personnel who saw him on the morning of 18 May 93 prior to the mishap flight testified Captain Jordan had no apparent illnesses, including headache (Tabs V-7 and V-24). Medical record review demonstrated no medical visits for complaints of headache during his entire Air Force career.

q. NAVAIDS AND FACILITIES

There is no evidence regarding malfunctioning nav aids or facilities.

r. WEATHER

Forecast weather on the Yukon MOA for the afternoon of 18 Mar 93 was 4000 feet scattered, 12,000 feet scattered 20,000 feet broken clouds with 7 miles inflight visibility. There was a warning for light to moderate turbulence from the surface to 10,000 feet (Tab W).

s. DIRECTIVES AND PUBLICATIONS

1. The following applicable publications and directives were reviewed. In all cases Major Command, Numbered Air Force, and 343 Wing supplements were reviewed.

REGULATION

- Air Force Regulation (AFR) 60-1, Flight Management, 9 Feb 90
- Air Force Regulation (AFR) 60-16, General Flight Rules, 27 Jan 92
- Air Force Regulation (AFR) 355-1, Disaster Preparedness Planning and Operations, 15 Mar 92
- Multi Command Regulation 55-79, Aircrew/Weapons Controller Procedures for Air Operations, 23 Oct 87
- Multi Command Regulation 55-79, Aircrew Weapons Controller Procedures for Air Operations, PACAF Ch 7, 26 Jul 91
- Major Command Manual 51-50, Tactical Aircrew Training, 30 Oct 85, Vol I/PACAF Ch 6
- Major Command Manual 51-50 Tactical Pilot Training, F-16, 1 Aug 91, Vol VIII
- Major Command Manual 51-50 Tactical Pilot Training, F-16, 22 May 92, Vol III/PACAF Ch 7
- PACAF Regulation 55-7, PACAF Life Support Program, 10 Jun 91
- 343 WG Flying Operations and Training Programs, 1 May 92
- 18 Fighter Squadron Standards, 9 May 92
- Technical Order 1F-16CG-1 Flight Manual USAF Series Acft F-16C/D Blocks 40/42, 29 Aug 88
- Technical Order 1F-16CG-1 Supplemental Flight Manual USAF Series Aircraft F-16C/D Blocks 40/42, 16 May 88
- Technical Order 1F-16CG-1-2, Supplemental Flight Manual USAF Series Aircraft F-16C/D, 10 Oct 92
- Technical Order 1F-16CG-1CL-1, Flight Crew Checklist USAF Series Aircraft F-16C/D Blocks 40/41, 29 Aug 88
- Technical Order 1F-16CG-34-1-1CL-1, Checklist, Non-Nuclear Weapons Deliver Flight Crew Procedures USAF Series Aircraft F-16C/D Blocks 40/42, 2 Dec 91

3. STATEMENT OF OPINION

- a. Under 10 U.S.C. 2254 (D) any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability by the United States or by any person referred to in those conclusions or statements.
- b. Insufficient evidence exists to support a conclusion regarding the cause of this mishap, however the following factors substantially contributed to the accident.

mishap, however the following factors substantially contributed to the accident.

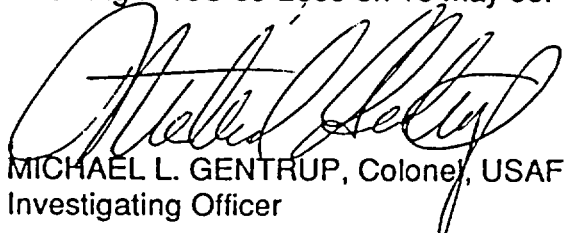
1. Mission Briefing. On the day of the accident the mishap pilot was scheduled to fly two Air-to-Air missions of different types and objectives. The mishap sortie was a 2V4 DACT mission with F-3 adversaries. The second sortie was to be flown as a 2V1+1 ACM IP Upgrade mission with other F-16's acting as adversaries. Based on testimony, the ACM mission was given priority and received the bulk of the briefing time allotted. The mission brief for the mishap sortie lasted approximately 15 minutes. Due to the demanding nature of this mission and its complexity, the time allotted was insufficient to adequately cover a detailed game plan with considerations for tactical contingencies. Additionally, the coordination briefing followed the air-to-air briefing outline from Multi Command Regulation 55-79, PACAF Chapter 7, Atch 1 which omitted the termination criteria for a defending aircraft with a descending flight path in the low altitude arena.

2. Proficiency. Captain Jordan's recent dedicated Air-to-Air training consisted of a 2V2 DACT sortie on 17 May 1993 and 3 BFM sorties on 18 Mar 1993. He did receive some Air-to-Air training in the interim during the Cope Thunder exercise, however this training, to include the sortie on 17 May 1993, did not involve high G, visual Air-to-Air maneuvering.

3. Task Loading. The tactical situation placed Captain Jordan in a demanding, high task environment. Fourteen seconds prior to receiving the radar spike from Courage 1, Rock had reported that both groups of F-3s were heading away from Stag 2. Two previous radio transmissions also indicated that both Stag 2 and Rock thought the eastern group of F-3s were heading away from Stag 2 and were no threat. The unexpected appearance of Courage 1 at Stag 2's left 7 o'clock alerted Captain Jordan of his low situational awareness. His low situational awareness while entering the BFM/High G arena placed him in a high task environment as his aircraft continued in a high rate of descent (> 30,000 feet per minute).

SUMMARY:

This report is submitted as a complete document of all factual information available to the Investigating Officer in accordance with AFR 110-14 regarding the aircraft accident involving F-16C 89-2069 on 18 May 93.


MICHAEL L. GENTRUP, Colonel, USAF
Investigating Officer