

**AFI 51-503 AIRCRAFT ACCIDENT INVESTIGATION REPORT
STATEMENT OF FACTS**

1. AUTHORITY:

Under the provisions of Air Force Instruction (AFI) 51-503, on 6 July 1998, the Twelfth Air Force Commander, Lieutenant General Lansford E. Trapp, Jr., appointed Lt Col James E. Rowland to conduct an aircraft accident investigation after an F-16C aircraft, SN 85-1550 collided with the ground near Ainsworth, Nebraska. The investigation was conducted at Sioux City Air National Guard Base (ANGB), Iowa from 10 July through 26 July 98. The technical advisors were Mister Victor F. LaPuma (Legal), Major Daniel L. Vandivort (Medical) and Captain Lee J. Mitchell (Maintenance) (Tab Y-1 through Y-6).

2. PURPOSE:

An aircraft accident investigation is convened under AFI 51-503. The investigation is intended primarily to gather and preserve evidence for claims, litigation, disciplinary and adverse administrative actions, and for all other purposes other than mishap prevention. In addition to setting forth factual information concerning the accident, the board president is also required to state his opinion concerning the accident (if there is clear and convincing evidence to support that opinion), or to describe those factors, if any, that in the opinion of the board president, substantially contributed to the accident. This investigation is separate and apart from the safety investigation conducted under AFI 91-204. The report is available for public dissemination under the Freedom of Information Act (5 U.S.C. 552) and AFI 37-131. Accident board members were convened to investigate the Class A aircraft accident involving an F-16C aircraft, SN 85-1550, which impacted the ground near Ainsworth, Nebraska on 13 May 1998. The pilot of the aircraft safely ejected from the aircraft, however, he did sustain injuries (Tab X-1). There was minimal damage to private and public property (Tab P-2, Tab BB-1 through BB-5). Total loss of government property was \$16,298,357.00 (Tab M-2).

3. SUMMARY OF FACTS:

a. History of Flight Activity:

The mission began with the flight briefing at approximately 0800 Local (L) at the 174th Fighter Squadron (FS)/185th Fighter Wing (FW) Sioux City ANGB, Iowa on 13 May 1998. The flight was briefed as a two ship Surface Attack Tactics sortie to IR-508 (low level route) and the O'Neill Military Operating Area (MOA). The call signs were Bat 41 and Bat 42. The flight took off from Sioux City ANGB at 0935L (Tab V-3, Tab V-16, Tab DD-1). At approximately 1002L, while in the IR-508 low level route structure, Bat 42, the mishap aircraft (MA), collided with a minimum of 5 American White Pelicans (AWP) (Tab J-14). A minimum of one AWP possibly penetrated the windscreen. A minimum of one AWP, or a substantial proportion of one, was ingested into the MA engine (Tab J-15). Immediately following the bird strike, Lt Col Lundquist, the mishap pilot (MP), ejected from aircraft SN 85-1550 (Tab J-20, Tab O-30, Tab R-2). Approximately 8.5 seconds later, the MA impacted the terrain (Tab J-13). The aircraft was completely destroyed (Tab M-2). Bat 41 remained in the mishap area for approximately 30 minutes to facilitate the crash and rescue effort by emergency response personnel. Bat

NUCLEAR REGULATORY COMMISSION

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In the matter of PPS
Staff _____ IDENTIFIED
Applicant RECEIVED
Intervenor _____ REJECTED _____
Cont'g Off'r _____
Contractor _____ DATE 2/1/02
Other _____ Witness _____
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41 then returned to Sioux City ANGB, landing at 1115L (Tab V-18, Tab DD-1). There was high media attention, in the local area, for about three to four days following the accident. The Sioux City ANGB Public Affairs office handled the media inquiries (Tab V-21).

b. Mission:

The purpose of the mission was to fly a two ship Surface Attack Tactics sortie and update Lt Col Lundquist's currency in low altitude operations, formation landing, and precision approach (Tab G-11, Tab K-2, Tab V-16).

c. Briefing and Preflight:

Lt Col Lundquist's crew rest was within established regulations (Tab V-2, Tab V-3, Tab AA-9). When Lt Col Lundquist arrived at the squadron, at approximately 0745L, he was notified he was being moved up to the first flight of the day, 0935L takeoff time, with Lt Col Crowden instead of his scheduled 1040L takeoff time in the second formation. Lt Col Crowden had already accomplished all the mission planning and was ready for the mission briefing. Lt Col Crowden using the 174 FS General Mission Briefing Guide conducted the mission brief. Testimony showed the brief was thorough and covered all the appropriate flight events to include bird strike procedures and Air Combat Command and Air National Guard Special Interest Items (Tab V-3 through Tab V-5, Tab V-16, Tab CC-1 through CC-12). Since Lt Col Lundquist was non-current in low altitude operations (Tab G-11), Lt Col Crowden briefed they would use a gradual "step down" approach while in the low altitude regime. He briefed they would "step down" initially from 1500 feet to a final altitude of 500 feet AGL as Lt Col Lundquist became more comfortable with low altitude flight. Lt Col Crowden briefed Lt Col Lundquist to fly the line abreast position and always stay at a higher altitude than him. There were no problems or misunderstandings experienced during the briefing or preflight, testimony reflects they were "standard" (Tab V-5, Tab V-6, Tab V-16).

d. Flight Activity:

The flight plan was local standard (stereo) flight plan 108. Stereo 108 included low altitude operations and provided sufficient pattern time to accomplish all required training. The route was from Sioux City ANGB to IR-508 to O'Neill MOA and then back to Sioux City ANGB (Tab K-4, Tab EE-1). The only deviation from the flight plan was instead of going to the primary entry point for IR-508, Bat 41 requested and received clearance to enter IR-508 at the alternate entry point. Nothing out of the ordinary was noted and all communications between Bat 41 flight and Air Traffic Control (ATC) were clear and understandable. No navigational difficulties with ground or on board systems were noted (Tab V-6, Tab V-16).

Bat 41 flight's departure from Sioux City ANGB at 0935L and entry into IR-508 was uneventful. Bat 41 received clearance to enter IR-508 from Minneapolis Center. After receiving the current altimeter setting from Minneapolis Center, Bat 41 asked if there were any traffic advisories. Minneapolis Center responded that there were none. No bird advisories were given or requested (Tab V-7, Tab V-16, Tab V-17).

Bat 41 flight entered the alternate entry point into IR-508 at the scheduled time and descended to an initial cruising altitude of approximately 1500 feet. Since the initial segment of the route took them over/near the Missouri River, Bat 41 flight remained at 1500 feet AGL for approximately two to three

minutes until clear of the river. For the next four to five minutes, Bat 41 flight began a gradual "step down" to approximately 500 feet AGL. In the area of Ainsworth, Nebraska (Tab V-8; Tab EE-2), Bat 41 noticed Bat 42 descending and rolling. Bat 41 radioed Bat 42 to "pull up". After the radio call, Bat 41 saw an inflated parachute behind the aircraft and realized Lt Col Lundquist had ejected from the aircraft. Bat 41 then turned the aircraft to establish an orbit over where the parachute had landed on the ground (Tab V-8, Tab V-17, Tab EE-2).

e. Impact:

The mishap aircraft (MA) collided with a minimum of 5 American White Pelicans while flying IR-508 at approximate coordinates N 42-27.559 W 99-51.160 at approximately 830 feet AGL and an airspeed of 520 knots. Aircraft components with significant bird remains were: MP helmet, parachute container assembly, aircraft canopy, ejection seat, and engine (Tab J-12, Tab J-14, Tab S-3 through Tab S-6). The canopy was designed to withstand a 4 pound bird strike at 350 knots (Tab J-21). The MA received multiple 12.5-15.5 pound bird strikes at 520 knots (Tab J-14 and O-49) resulting in the canopy's structural failure either as result of the birds striking the fuselage (Tab J-21 through Tab J-24) or impacting the canopy directly. There was no evidence of fire prior to impact. Evidence of two concentrated areas of bird debris in the exhaust duct of the engine indicates that at least two large portions of bird were likely ingested into the engine (Tab J-12).

The MP's testimony relates that he was looking out the left side (maintaining position off of lead) and just beginning to turn his head to look forward when he was immediately "pinned to the left...and back against the seat." He describes it felt like "someone had put a big fan on my face...and someone was beating me with a ball bat." He remembers a loud fluttering noise and a loss of vision. The MP then ejected even though he does not recall doing so (Tab V-9, Tab V-13).

The engine operated normally for the approximate 8.5 seconds of flight after the bird strike and prior to ground impact (Tab J-13). The mishap aircraft impacted the ground with an Angle of Attack (AOA) of 1.2, an 11 degree nose down pitch angle, and in a 79 degree left bank (Tab O-49). A scar in the ground approximately 100 feet long, in front of the impact crater, appeared to be caused by the left wing tip. Beyond the impact site, the debris was primarily scattered over a distance of approximately one mile in the general direction of the scar (Tab J-9 and R-2).

Aircraft SN 85-1550 impacted the terrain at approximately 1003L on 13 May 1998 at N 42-26.214 and W 99-52.022 (Tab O-30), or approximately 7 miles south of Ainsworth, Nebraska, (Tab V-24) at a terrain elevation less than 2650 feet Mean Sea Level (MSL) (Tab J-20).

f. Egress System:

The evidence indicates the ejection control handle (D-ring) was pulled initiating the ejection sequence. However, the mishap pilot does not recall pulling the D-ring or initiating the ejection sequence. The ejection was performed within the performance envelope of the system. All indications are the system performed as designed (Tab J-2 through Tab J-8, Tab V-13).

g. Personal and Survival Equipment:

According to the aircraft forms and sworn testimony, all personal and survival equipment inspections were up to date and performed correctly (Tab U-14 through Tab U-29, Tab U-37,

Tab U-38, Tab V-27, Tab V-30). The mishap pilot did not utilize any of his personal/survival equipment due to his semi-conscious state (Tab V-10).

h. Rescue:

The time of the crash was approximately 1003L, 13 May 1998. The origin of the first rescue call was from Lt Col David Crowden, 185 FW, 174 FS/CC, Flight Lead for this two-ship formation. The first call was made to Minneapolis Air Traffic Control (ATC) Center about 1005L after Lt Col Crowden climbed to a higher altitude for radio reception. Lt Col Crowden also contacted the 185 FW Operations Center within minutes of the mishap (Tab V-17). The first person to reach Lt Col Lundquist was a civilian, Randy Hart, a hired hand for a local rancher. A Nebraska State Roads employee, working in the area, called the local authorities to report the crash. The Brown County Hospital Ambulance arrived at the mishap site at approximately 1018L.

The responding medical unit found Lt Col Lundquist on the ground, face down, without his helmet. Lt Col Lundquist was injured (Tab X-1). He alternated between consciousness and semi-consciousness during transport to the Brown County Hospital in Ainsworth, Nebraska (Tab V-9). Contact made by Lt Col Crowden with the 185 FW Operations Center resulted in a call being made by Capt J.B. Schreur, 185 FW Operations Center, to Marian Health Center (Tab V-26). This call resulted in the dispatch of the Life Flight Helicopter from Marian Health Center in Sioux City, IA, to the Brown County Hospital.

At the scene of the mishap, there were aircraft parts and debris scattered across an area measuring approximately 500 yards in length by 150 to 200 yards in width. Included in the debris were a number of dead pelicans and parts of dead pelicans (Tab V-20).

i. Crash Response:

The crash response was initiated by Lt Col David E. Crowden, 185 FW, 174 FS/CC, Flight Lead for the two ship formation. It is estimated the crash response effort on the ground began within 15 minutes of the rescue call. The first person to reach the MP on the ground arrived on a four wheel all terrain vehicle (ATV). The operator of the ATV was Randy Hart (Tab V-10, Tab V-17, Tab V-19). He assured the MP everything would be all right, told the MP not to move, and informed him the ambulance was arriving at the pasture gate (Tab V-10). Within a few minutes of Mr. Hart's arrival, a rescue vehicle/ambulance from the Brown County Hospital in Ainsworth, NE arrived at the crash site (Tab V-10, Tab V-18). The MP was loaded onto the gurney, placed in the ambulance, and transported to Brown County Hospital. The MP was stabilized at Brown County Hospital and prepared for transfer by Life Flight Helicopter to Marian Health Center, Sioux City, IA (Tab V-11). The Life Flight Helicopter arrived at Brown County Hospital at about 1050L and departed with the MP about 1215L. The helicopter arrived at Marian Health Center about 1400L. It took approximately 4 hours from the time of the mishap until the MP reached Marian Health Center.

Equipment at the crash scene included Mr. Hart's ATV, the Brown County ambulance, one Brown County Sheriff's car, two Nebraska State Patrol cars, and Ainsworth's Fire Department vehicles (Tab V-17 through Tab V-19). No delays were encountered in either reaching or transporting the MP.

The weather was clear, dry, and sunny at the mishap site. The mishap occurred during the midmorning in daylight. The topography was described as sand hills and hilly grasslands.

Civilians at the mishap site included Mr. Hart, the ambulance crew, Nebraska State Troopers, and the Brown County Sheriff. Other bystanders were also nearby but are not named. All personnel were either very helpful or did not interfere with the rescue operation (Tab V-17 through Tab V-19).

The 185 FW responded to the mishap scene with Col Dunne's truck (privately owned vehicle), a Mobile Command Post, two trailers loaded with two "light-alls," and various other military vehicles to haul and tow other equipment (Tab V-19). The evidence of record indicates no difficulties were experienced as a result of weather, time of day, topography, civilians on scene, or local law enforcement.

j. Maintenance Documentation:

A thorough review of the aircraft Air Force Technical Order (AFTO) Forms 781 found no discrepancies or documentation problems related to the accident (Tab U-13 through Tab U-29). A careful review of the AFTO Forms 781K and aircraft Time Compliance Technical Order (TCTO) Report showed all TCTOs were completed on time. There were no open TCTOs related to the accident (Tab U-15 through Tab U-18, Tab U-33, Tab U-34). All time change requirements were completed on time and no discrepancies were noted in the AFTO Forms 781A or 781K due to time change requirements at the time of the accident (Tab U-41, Tab U-42). The original AFTO Forms 781K, sections A and G, do not indicate any overdue scheduled inspections. Also, no discrepancies were present in the aircraft AFTO Forms 781A or 781K that were the result of a previous scheduled inspection (Tab U-13 through Tab U-29, Tab U-39, Tab U-40).

Pre-mission oil analysis was performed and showed no abnormalities (Tab U-12). A review of the Core Automated Maintenance System data, aircraft jacket files, active forms and historical engine records showed no adverse trends or documentation problems (Tab U-13 through Tab U-32). Oil analysis, from the previous 60 days of flying activity, showed no trends related to the accident (Tab U-12). The liquid oxygen cart used to service the aircraft was sampled and found to be within limits (Tab U-10). There are no maintenance procedures, practices or performance issues that are factors in this accident.

k. Maintenance Personnel and Supervision:

A review of maintenance personnel AF Forms 623 (On The Job Training Records) and AF Forms 797 (Job Qualification Standard Continuation/Command) verified individuals assigned to work on the mishap aircraft were properly trained and held the skill level to perform assigned duties. The aircraft's Primary Crew Chief completed the pre-flight in accordance with the appropriate technical data (Tab U-43 through Tab U-46, Tab V-32). Supervision was available and sufficient for the operation being performed (Tab U-35, Tab U-36, Tab V-31, Tab V-32). There are no maintenance practice or procedures that are factors in this accident.

l. Engine, Fuel, Hydraulic and Oil Inspection Analysis:

After a thorough review of the historical engine inspection and performance data, there are no trends or documentation problems associated with the aircraft accident (Tab U-30 through Tab U-32). Fuel samples were taken from the truck and tank used to fuel the aircraft. Local

testing of the samples was conducted and the fuel was found to be within limits in accordance with the appropriate technical data (Tab U-7 through Tab U-9). Fuel samples were also tested at Wright Patterson AFB. At Wright Patterson the sample from the fuel truck failed due to visual particulate, but the fuel passed the content portion of the test when burned (Tab U-1 through Tab U-6). An oil sample was collected from the cart used to service the aircraft and the sample was found to be within limits (Tab U-11). Post accident fuel, oil and hydraulic samples were not available due to the severity of the impact.

m. Airframe and Aircraft Systems:

Summary of the Seat Data Recorder and Crash Survivable Memory Unit indicated all flight controls, hydraulics, engines, avionics, and electrical systems were operating normally prior to the bird strike (Tab J-16 through Tab J-20). As a result of this accident there were no stations, components or accessories overhauled, repaired, bench checked or tested.

n. Operations Personnel and Supervision:

The mission was authorized by Lt Col Gary Cranmer, 174 Fighter Squadron (FS) Operations Officer (Tab K-2). The briefing officer for the mission was Lt Col David Crowden, the 174 FS Commander, a designated squadron supervisor (Tab G-12). No other squadron supervisory personnel attended the briefing. Lt Col Crowden used the 174 FS General Mission Briefing Guide and applicable mission specific guides (Tab V-4, Tab V-16, Tab CC-1 through Tab CC-12). Lt Col Lundquist confirmed the briefing was performed in an excellent and thorough manner (Tab V-5).

o. Pilot Qualification:

Lt Col Lundquist is a command pilot with over 3600 hours total flying time. He has over 516 hours total time and 193 hours of instructor time in the F-16C (Tab G-6). Lt Col Lundquist was performing local annual training pursuant to 32 U.S.C. 503(A) and ANGI 36-2001 (Tab T-1). He received a Qualification Level 1 (Q-1) (the highest qualification level) on his 5 Sep 97 mission flight check with no noted discrepancies and a Q-1 on his Instrument/Qualification flight check on 29 May 97 with no noted discrepancies (Tab T-2 through Tab T-5). As a Basic Mission Capable (BMC) Experienced pilot, he was required by the Ready Aircrew Program (RAP) to fly 5 sorties each month and 15 in a three month period. At the time of the accident, Lt Col Lundquist was on BMC probation for failure to meet the RAP one or three month lookbacks (Tab T-6). His recent flight time is as follows (Tab G-10):

	Hours	Sorties
30 days	2.2	2
60 days	2.2	2
90 days	6.0	5

Lt Col Lundquist was qualified but non-current in four events, including low altitude, at the time of the accident. Lt Col Crowden was qualified and current to perform the duties required of the mission (Tab G-11 and G-12).

p. Medical:

A thorough review of the mishap pilot's medical and dental records was performed. Lt Col Lundquist was medically qualified to perform the duties of the mission at the time of the mishap. Present in the medical records was a current AF Form 1042 "Medical Recommendation for Flying Special Operational Duty," valid until 31 Dec 1998 (Tab X-2).

Toxicological examination of blood and urine samples taken immediately upon arrival of the mishap pilot at Marion Health Center revealed a carboxyhemoglobin saturation of less than 1% and no detected ethanol. Urine screening for drugs detected only the presence of 0.2 mg/L morphine (Tab X-4). Lt Col Lundquist was administered a total of 4 mg of Morphine Sulfate by medical personnel prior to his arrival at Marion Health Center.

The post-accident medical examination records of the mishap were reviewed. These results are summarized in the "Statement of Injury or Death" (Tab X-1). All injuries appear to be related to the accident.

q. Nav aids and Facilities:

Nav aids, facilities and Notice to Airman (NOTAMs) were reviewed. Nothing was noted that would have contributed to the mishap (Tab K-11 through Tab K-13).

r. Weather:

The forecast weather for IR-508 was ceiling and visibility greater than 3000 feet and 5 miles. The clouds were forecast to be 5000 to 7000 feet scattered and 10,000 to 15,000 feet scattered (Tab K-6). According to pilot testimony, the actual weather in the area of the accident was sunny, clear, some scattered clouds above them, 8 to 10 miles visibility, a light haze, no precipitation, and no weather hazards. Both pilots testified the sun was behind them and there was no glare hampering forward visibility (Tab K-10, Tab V-9, Tab V-17). In the Ainsworth area, the temperature was 62 degrees, winds at 160/18 gusts 25 miles per hour, and an altimeter setting of 2982 (Tab K-9).

s. Governing Directives and Publications:

(1) Primary directives and publications relevant to this mishap

(a) Pilot related Instructions and Plans

*Multi Command Instruction (MCI) 11-F16, Volume III,
Flying Operational Procedures F-16 (Tab AA-1 through Tab AA-3)*

Air Force Instruction (AFI) 11-2F-16, Volume 1, Flying Operations (Tab AA-4 through Tab AA-8)

Air Force Instruction (AFI), ANG Supplement 1 (Tab AA-9)

185 FW Plan 91-202, Bird-Aircraft Strike Hazard Plan (Tab O-2 through Tab O-20)

(b) Maintenance related Instructions

ANGI 21-101 – Maintenance Management of Aircraft (Tab U-35, Tab U-36)

Technical Order 00-20-1 – Preventive Maintenance Program General Policy Requirements and Procedures (Tab U-37 through Tab U-42)

Technical Order 00-20-5 – Aircraft, Drone, Aircrew Training Devices, Engines, and Air-Launched Missile Inspections, Flight Reports, and Supporting Maintenance Documents (Tab U-43 through Tab U-46)

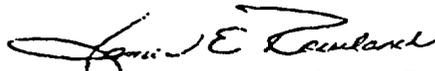
(2) Known or suspected deviations from directives or publication by pilot members or others involved in the mishap mission.

(a) Pilot: known or suspected deviations.

None.

(c) Maintenance: known or suspected deviations.

None.



JAMES E. ROWLAND, Lt Col, USAF
Investigation Officer

**AFI 51-503 AIRCRAFT ACCIDENT INVESTIGATION REPORT
STATEMENT OF OPINION**

Under 10 U.S.C. 2254(d), any opinion of the accident investigators as to the cause or causes of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as 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.

1. OPINION SUMMARY (See Discussion of Opinion section after the Opinion Summary section for detailed explanation):

The evidence of record shows that while flying at approximately 830 feet AGL, an F-16C SN 85-1550, piloted by Lt Col Lundquist, impacted a minimum of five American White Pelicans which caused some structural failure of the forward fuselage, penetrated the windscreen and were ingested into the engine. Due to the bird(s) penetrating the canopy, the mishap pilot ejected and the aircraft impacted the terrain on 13 May 1998, approximately 7 miles south of Ainsworth, Nebraska. Based on clear and convincing evidence, the accident was caused by birds impacting the aircraft resulting in canopy failure leading Lt Col Lundquist to eject.

2. DISCUSSION OF OPINION:

I reviewed all the maintenance information and determined maintenance was not a factor in this accident. Lt Col Crowden, flight lead for the two-ship formation, was current and qualified to lead the formation and accomplish all the scheduled training. Lt Col Lundquist, the mishap pilot (MP), was qualified but non-current in four flight events, low air to air engagements, low altitude, formation landings and precision approaches. The mission was a standard profile that allowed Lt Col Lundquist to regain currency in low altitude operations and pattern events. The mission brief was thorough. The 185th Fighter Wing's Bird-Aircraft Strike Hazard (BASH) Plan and the 174th Fighter Squadron's BASH Program are comprehensive and an integral part of their operations. Pilot qualifications, the mission briefing, regulations, and publications were not factors in this accident.

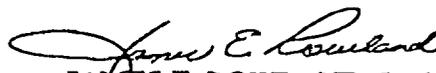
It is evident from the Bash Report (Tab J-14), Engine Investigation Report (Tab J-9) and Canopy System Report (Tab J-21) that the mishap aircraft (MA) collided with a minimum of 5 American White Pelicans while flying IR-508. Aircraft components with significant bird remains were: MP helmet, parachute container assembly, aircraft canopy, ejection seat, and engine (Tab J-14). The reports are inconclusive on whether the canopy failure was due to birds impacting the fuselage and causing the canopy frame to fail, or birds impacting and penetrating the canopy directly. Regardless, the canopy was designed to withstand a 4 pound bird strike at 350 knots (Tab J-21) and it received multiple 12-15 pound bird strikes at 520 knots (Tab J-14 and Tab O-49) resulting in its structural failure.

The MP's testimony relates that he was looking out the left side (maintaining position off of lead) and just beginning to turn his head to look forward when he was immediately "pinned to the left...and back against the seat." He describes it felt like "someone had put a big fan on my face...and someone was beating me with a ball bat." He remembers a loud fluttering noise and a loss of vision (Tab V-9). In my opinion, the MP was disoriented from the impact of the birds entering the cockpit and

subsequent windblast effects (Tab V-9, Tab V-13). Even though the MP does not recall initiating the ejection sequence, I believe he did so as a reflex action due to his training.

The evidence is clear and convincing that the bird strike and subsequent canopy failure caused the MP to eject from the MA. The MA SN 85-1550 continued to fly for another 8.5 seconds prior to ground impact (Tab J-13). The MA impacted the ground at approximately 1003L on 13 May 1998 approximately 7 miles south of Ainsworth, Nebraska.

Dated this 24th day of July, 1998



JAMES E. ROWLAND, Lt Col, USAF
Investigation Officer