



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE

AUG 01 2013

ACTION OF THE CONVENING AUTHORITY

The report of the accident investigation board, conducted under the provisions of AFI 51-503, that investigated the 22 May 2013 mishap over Stockton Lake, Missouri, involving A-10C, T/N 79-0164, assigned to the 442nd Fighter Wing, Whiteman Air Force Base, MO, complies with applicable regulatory and statutory guidance and on that basis is approved.

Craig N. Gourley
CRAIG N. GOURLEY, Maj Gen, USAF
Convening Authority

A-10C accident investigation report released

ROBINS AIR FORCE BASE, Ga. – Poor judgment and a lapse in flight discipline caused an A-10C Thunderbolt II to strike two cables over Stockton Lake in Missouri, according to the Air Force Reserve Command Accident Investigation Board report released _____.

According to the report, the aircraft from the 442nd Fighter Wing, Whiteman AFB, Mo., was on a two-plane low altitude tactical navigation training mission at the time of the mishap. The lake is about 90 miles south of the base.

The accident board president found convincing evidence that the cause of the mishap was the pilot's poor judgment and lapse in flight discipline that resulted in violation of flight rules and operating procedures relating to minimum altitudes.

As the flight flew over the southeast branch of the lake, the mishap pilot descended below the approved minimum altitude of 300 feet above ground level and maneuvered toward a boat that was traveling southeast on the lake.

The flight leader radioed the mishap pilot and told him that the flight was approaching power lines that cross the lake. The mishap pilot acknowledged the call but continued his descent. At about 140 feet above ground level, the mishap aircraft struck two protective cables that run above the power lines crossing the lake.

The accident board determined that the following three factors contributed to the mishap:

- Mishap pilot focused his attention on the boat in the lake and did not see the cables his plane hit.
- Mishap pilot demonstrated complacency immediately prior to mishap by descending aircraft rather than climbing as a response to altitude advisories.
- Mishap pilot failed to acknowledge confirmation he saw cables after mishap flight leader identified threat to navigation presented by cables over the lake.

The mishap pilot was able to land the aircraft at Whiteman AFB, and the plane was towed to the base's aircraft parking ramp.

The aircraft sustained extensive damage to the right horizontal stabilizer, vertical tail and rudder; the left wing tip; and weapons and suspension equipment mounted under the left wing.

The total repair cost for the plane was \$698,858.69. The cost to repair the cables was not known at the time of the report.

For more information, contact the AFRC Public Affairs Office at (478) 327-1752 or email HQ.PAN.List@us.af.mil

EXECUTIVE SUMMARY

AIRCRAFT ACCIDENT INVESTIGATION A-10C, T/N 79-0164, WHITEMAN AIR FORCE BASE, MISSOURI 22 MAY 2013

On 22 May 2013 at approximately 1548 central daylight time, the mishap aircraft (MA), an A-10C, tail number (T/N) 79-0164, assigned to the 442nd Fighter Wing, Whiteman Air Force Base (AFB), Missouri, impacted two cables during a low altitude training mission over Stockton Lake, Missouri, approximately 70 miles south of Whiteman AFB. Neither the mishap pilot (MP) nor any civilians near the mishap site were injured. The MA sustained extensive damage to the right horizontal stabilizer, vertical tail and rudder; the left wingtip; and weapons and suspension equipment mounted under the left wing, with a total repair cost of \$698,858.69. Cost to repair the cables is unknown at this time.

The mishap flight (MF) was planned, briefed and flown as a local two-ship low-altitude surface attack tactics mission. The planned flow of the mission was to depart Whiteman AFB under visual flight rules, complete air-to-air refueling in the Truman A and B Military Operating Areas (MOA), conduct low altitude tactical navigation (LATN) training in the LATN East area at 300 feet above ground level (AGL), execute simulated Maverick attacks in the Truman C MOA, and return to Whiteman AFB. The MF departed the Truman MOA and flew south toward Stockton Lake to conduct LATN. As the flight flew over the southeast branch of the lake, the MP descended below the approved minimum altitude of 300 feet AGL and maneuvered toward a boat that was traveling southeast on the lake. The MF lead (MFL) called on the radio that the flight was approaching power lines that cross the lake. The MP acknowledged the call but did not call "contact" on the obstruction as he continued his descent. At approximately 140 feet AGL, the MA impacted two protective cables that run above the power lines crossing the lake. The MP called "knock-it-off" and began a climb as the MFL rejoined with the MP. The MP stated to the MFL that he "hit those power lines." The MFL examined the visible damage to the MA. The flight coordinated and completed checklist procedures for structural damage, controllability, and hydraulic failure, as the right hydraulic system eventually failed due to a cut hydraulic line in the leading edge of the right horizontal stabilizer. The flight coordinated the recovery plan with the supervisor of flying and declared an emergency with Whiteman AFB tower. The MP safely recovered the MA out of a straight-in approach. The MP shut down at the end of runway after landing, and the MA was towed to the parking ramp.

The board president found clear and convincing evidence that the cause of the mishap was the MP's poor judgment and lapse in flight discipline resulting in violation of flight rules and operating procedures relating to minimum altitudes. Additionally, the board president found by a preponderance of the evidence that the following factors substantially contributed to the mishap: (1) the MP channelized his attention on the boat and did not see the cables he ultimately impacted; (2) the MP's complacency led to lack of response to altitude advisories; and (3) the MFL did not confirm that the MP saw the cables nor direct the MP to climb in the absence of that confirmation, contrary to widely utilized techniques.

Under 10 U.S.C. § 2254(d) the opinion of the accident investigator as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report, if any, may not be considered as evidence in any civil or criminal proceeding arising from the accident, nor may such information be considered an admission of liability of the United States or by any person referred to in those conclusions or statements.

SUMMARY OF FACTS AND STATEMENT OF OPINION

**A-10C, T/N 79-0164, WHITEMAN AIR FORCE BASE, MISSOURI
22 MAY 2013**

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COMMONLY USED ACRONYMS AND ABBREVIATIONS

303 FS	303rd Fighter Squadron	Lt Col	Lieutenant Colonel
442 FW	442nd Fighter Wing	LOX	Liquid Oxygen
AAR	Air-to-Air Refueling	MA	Mishap Aircraft
AF	Air Force	Maj	Major
AFB	Air Force Base	MAJCOM	Major Command
AFE	Aircrew Flight Equipment	MAV	Maverick Missile
AFI	Air Force Instruction	MCC	Mishap Crew Chief
AFIP	Air Force Institute of Pathology	MEF	Mission Execution Forecast
AFPAM	Air Force Pamphlet	MF	Mishap Flight
AFRC	Air Force Reserve Command	MFCD	Multi-Function Color Display
AFTO	Air Force Technical Order	MFL	Mishap Flight Lead
AGL	Above Ground Level	MLG	Main Landing Gear
AIB	Aircraft Investigation Board	MOA	Military Operating Area
AIM	Air Intercept Missile	MP	Mishap Pilot
ARMS	Aviation Resource Management System	MS	Mishap Sortie
BDU	Bomb Dummy Unit	MSL	Mean Sea Level
CAS	Close Air Support	NM	Nautical Miles
Capt	Captain	NOTAMS	Notices to Airmen
Col	Colonel	OG	Operations Group
CT	Continuation Training	Ops Tempo	Operations Tempo
DoD	Department of Defense	ORM	Operational Risk Management
DTC	Data Transfer Cartridge	OSS	Operations Support Squadron
DVADR	Digital Video Audio Recording System	PA	Public Affairs
ECHUM	Electronic Chart Update Manual	PEX	Patriot Excalibur Scheduling System
EOR	End of Runway	PGCAS	Predictive Ground Collision Avoidance Sys.
ECS	Environmental Control System	PHA	Physical Health Assessment
EOS	Emergency Oxygen System	PI	Phase Inspection
FAA	Federal Aviation Administration	PIC	Pilot in Command
FCF	Functional Check Flight	PSI	Pounds Per Square Inch
FL	Flight Lead	QA	Quality Assurance
FLCS	Flight Control System	RTB	Return To Base
FPM	Feet Per Minute	SAT	Surface Attack Tactics
FS	Fighter Squadron	SIB	Safety Investigation Board
ft	Feet	SII	Special Interest Item
g	Gravitational Force	SOF	Supervisor of Flying
HUD	Head Up Display	SUA	Special Use Airspace
IAW	In Accordance With	TCTO	Time Compliance Technical Order
IMDS	Integrated Maintenance Data System	TER	Triple Ejector Rack
IP	Instructor Pilot	TFI	Total Force Initiative
K	Thousand	T/N	Tail Number
KCAS	Knots Calibrated Airspeed	TOD	Tech Order Data
KIAS	Knots Indicated Airspeed	TR	Traditional Reservist
KTAS	Knots True Airspeed	TVV	Total Velocity Vector
kts	Knots	U.S.C.	United States Code
L	Local	VFR	Visual Flight Rules
LATN	Low Altitude Tactical Navigation	VVI	Vertical Velocity Indicator

The above list was compiled from the Summary of Facts, the Statement of Opinion, the Index of Tabs, and Witness Testimony (Tab R).

SUMMARY OF FACTS

1. AUTHORITY AND PURPOSE

a. Authority

On 31 May 2013, Major General Craig N. Gourley, Vice Commander, Air Force Reserve Command (AFRC), appointed Colonel William A. Lyons to conduct an aircraft accident investigation of the 22 May 2013 mishap of an A-10C aircraft, tail number (T/N) 79-0164, near Whiteman Air Force Base (AFB), Missouri. The A-10C aircraft accident investigation was conducted in accordance with Air Force Instruction (AFI) 51-503, *Aerospace Accident Investigations*, at Whiteman AFB, Missouri, from 6 June 2013 through 25 June 2013. A Legal Advisor, Pilot Member, Maintenance Officer, Flight Surgeon and Recorder were also appointed to the AIB (Tab Y). This AIB was conducted prior to the completion of a Safety Investigation Board (SIB) on direction of Major General Gourley. Applicable tabs from an SIB report that would have been provided by the SIB to the AIB were not available to the AIB. Those tabs (Tabs A through S) were created by the AIB in order to maintain the normal report convention and to facilitate a smooth transition to an SIB if the command chooses to convene one.

b. Purpose

This is a legal investigation convened to inquire into the facts surrounding the aircraft or aerospace accident, to prepare a publicly-releasable report, and to gather and preserve all available evidence for use in litigation, claims, disciplinary actions, administrative proceedings, and for other purposes.

2. ACCIDENT SUMMARY

On 22 May 2013, at approximately 1548 local time (L), the mishap aircraft (MA), an A-10C, T/N 79-0164, assigned to the 442nd Fighter Wing (442 FW), Whiteman AFB, Missouri, impacted two protective cables above a major power transmission line crossing Stockton Lake, 70 miles south of Whiteman AFB, Missouri, during a training mission (Tab AA2). The Mishap Pilot (MP) was able to fly the MA back to Whiteman AFB and sustained no injuries. The aircraft sustained significant damage from the impact, with repair cost totaling \$698,858.69 (Tab P1). The two protective cables were severed and fell into Stockton Lake. Cost to repair the cables is unknown at this time. Local media interest was moderate in the 48 hours following the mishap, but has since dissipated.

3. BACKGROUND

The 303rd Fighter Squadron (FS) operates the MA. The 303 FS is a squadron within the 442 FW, which is a unit within 10th Air Force (10 AF). 10 AF is a Numbered Air Force (NAF) within AFRC.

a. Air Force Reserve Command (AFRC)

AFRC's primary mission is to provide combat ready forces to fly, fight and win. Reservists support nuclear deterrence operations; air, space and cyberspace superiority; command and control; global integrated intelligence, surveillance, and reconnaissance; global precision attack; special operations; rapid global mobility and personnel recovery. They also perform space operations, aircraft flight testing, aerial port operations, civil engineer, security forces, military training, communications, mobility support, transportation and services missions.



The Air Force Reserve Command consists three NAFs—Fourth Air Force, March Air Reserve Base, California; Tenth Air Force, Naval Air Station Fort Worth Joint Reserve Base, Texas; Twenty-Second Air Force, Dobbins Air Reserve Base, Georgia—and the Force Generation Center, Robins Air Force Base, Georgia (Tab CC1).

b. Tenth Air Force (10 AF)

10 AF is headquartered at Naval Air Station Fort Worth Joint Reserve Base, Texas. 10 AF is one of three NAFs in Air Force Reserve Command, and is responsible for command supervision of 13 units, ensuring each maintains the highest combat capability to augment active duty forces in support of national objectives (Tab CC2).



c. 442nd Fighter Wing (442 FW)

The mission of the 442 FW is to train Air Force Reserve personnel, as well as operate, maintain and support the A-10 Thunderbolt II at the highest level of combat readiness. As the Air Force's only fighter plane designed for close air support (CAS), the A-10 provides critical front-line support for U.S. and allied forces on the ground. The A-10 also conducts combat search and rescue missions and provides forward air control (Tab CC3).



d. 303rd Fighter Squadron (303 FS)

The 303rd Fighter Squadron was constituted on May 28, 1943 and activated September 1, 1943, as the 303rd Troop Carrier Squadron, one of four squadrons assigned to the 442nd Troop Carrier Group at Sedalia Army Air Field, now Whiteman AFB, Missouri. In 1982, the 303rd FS received the A-10 Thunderbolt II.



In March 2003, 60 years since the 303rd was first brought into existence for World War II, squadron members and aircraft were called to arms and deployed to Iraq to support the war effort in Operation Iraqi Freedom. The squadron made Air Force history when it became the first Air Force fighter squadron to forward deploy into Iraq, based at Tallil AB in the southern part of that country. The squadron made Air Force history again when it became the first Air Force fighter squadron to forward deploy a second time into Iraq, this time to Kirkuk AB in northern Iraq. The 303rd returned home from Iraq in November 2003 following a highly successful 8-month deployment with no aircraft damage and no combat injuries (Tab CC4).

e. A-10C Thunderbolt II

The A-10 Thunderbolt II has excellent maneuverability at low air speeds and altitude, and is a highly accurate and survivable weapons-delivery platform. The aircraft can loiter near battle areas for extended periods and operate in low ceiling and visibility conditions. The wide combat radius and short takeoff and landing capability permit operations in and out of locations near front lines.



The Thunderbolt II can employ a wide variety of conventional and precision munitions, including the GAU-8/A 30mm cannon, capable of firing 3,900 rounds per minute, to defeat a wide variety of targets including tanks (Tab CC5).

4. SEQUENCE OF EVENTS

a. Mission

The mishap mission, flown on Wednesday, 22 May 2013, was planned as “DEUCE 01” flight, a local two-ship low altitude surface attack tactics (SAT) continuation training (CT) mission. The purpose of the mission was to improve the proficiency of the Mishap Flight Lead (MFL) (DEUCE 01) and MP (DEUCE 02) in air-to-air refueling (AAR), low altitude operations down to 300 feet above ground level (AGL), and Maverick air-to-surface missile employment. The mission was authorized by the 442 FW Chief of Safety, the operations supervisor who approved the AF IMT 4327, *ARMS Fighter Flight Authorization* (Tab K1.1).

b. Planning

The mission was scheduled in Patriot Excalibur Scheduling System (PEX) as a CAS sortie (Tab K1.2), but the MFL planned a SAT mission for his and the MP's training. Mission planning was completed the day of the mishap sortie (MS). The MFL consulted with the MP on any training requirements or other requests the MP had. There were none. The MFL produced the mission data (lineup) card (Tab AA1) and loaded the mission data into the data transfer cartridges (DTCs). The MP completed the 303 FS Risk Management Worksheet, with a total value of 9, indicating a low risk for the flight (Tab K1.4). The planned flow of the mission was a visual flight rules (VFR) departure, AAR in the Truman A and B Military Operating Areas (MOA), low altitude tactical navigation (LATN) at 300 feet AGL in the Whiteman AFB LATN East area, simulated Maverick attacks in the Truman C MOA, and return to Whiteman AFB. The flight briefing began on time at 1310L, two hours prior to takeoff. The MFL briefed all portions of the briefing. All AFI 11-2A-10C, Volume 3, required briefing items were covered utilizing the briefing room interactive (electronic) briefing guides. Pertinent training rules from AFI 11-214 were briefed. No special emphasis was placed on training rules or operating procedures that applied to low altitude operations and obstacle avoidance because the MFL had selected a route that avoided obstacles that would be a factor to the flight at 300 feet. According to the MFL, the MP was attentive and focused in the briefing and did not indicate any lack of understanding of the overall mission plan prior to stepping to the aircraft (Tab R13).

c. Preflight

Weather, Notices to Airmen (NOTAMs) and bird watch condition were checked before the brief, and both pilots signed out on the flight authorization (Tabs F1, K1.3 and K1.5). The flight stepped to the aircraft on time. Inspection and donning of aircrew flight equipment (AFE) were normal. The Mishap Crew Chief (MCC) stated there were no abnormalities in the preflight walk-around inspection, engine start, ground operations or taxi out of parking (Tab R19). The MFL stated the MP did not give any indication of any aircraft anomalies or malfunctioning systems, and did not appear to be rushed or distracted during ground operations (Tab R13).

d. Summary of Accident

After conducting uneventful taxi and end of runway (EOR) arming procedures, DEUCE 01 flight departed Runway 01 at 1507L under VFR. Review of MFL's and MP's heads up display (HUD) videos revealed that throughout the MF's operating area, there was a scattered-to-broken cloud deck from approximately 3000 feet to 4000 feet AGL with unrestricted visibility (Tab F2). The flight had to maneuver at times to find areas clear enough of clouds to descend to low altitude and climb back above the clouds, but maintained required VFR cloud clearances throughout the flight. Bird activity was low and not a factor to the flight (Tabs K1.5 and R13). The flight rendezvoused with a KC-135, call sign WYLIE 33, and conducted AAR in the Truman MOA. According to the MFL, the AAR occurred further south in the MOA than originally planned, and upon completion of AAR, he changed the planned flow of the mission. He told the MP that after departing the tanker, they were going to conduct the Maverick attacks in the Truman C MOA before the LATN, since they were already in the Truman C airspace at the conclusion of AAR. The MP acknowledged the change without any questions (Tab R13). The flight received clearance into the airspace and proceeded to conduct simulated Maverick attacks against targets

in a gravel pit, a complex that is often used for Maverick training (Tab R13). Because the original plan was to conduct LATN before operating in the Truman C MOA, the MFL had loaded an altitude alert of 300 feet into the DTC. After changing the flow of the mission, the MFL forgot to reset his altitude alert to 500 feet, which would have notified him when he descended below the bottom of the Truman MOA. The MFL operated below the minimum altitude of the Truman MOA for several minutes before recognizing his error and correcting it. While noteworthy, this error was unrelated to the mishap. The MP maintained his altitude above 500 feet AGL throughout the operations in the Truman MOA. After completing the Maverick training, the flight departed the Truman MOA to the south and descended to conduct LATN.

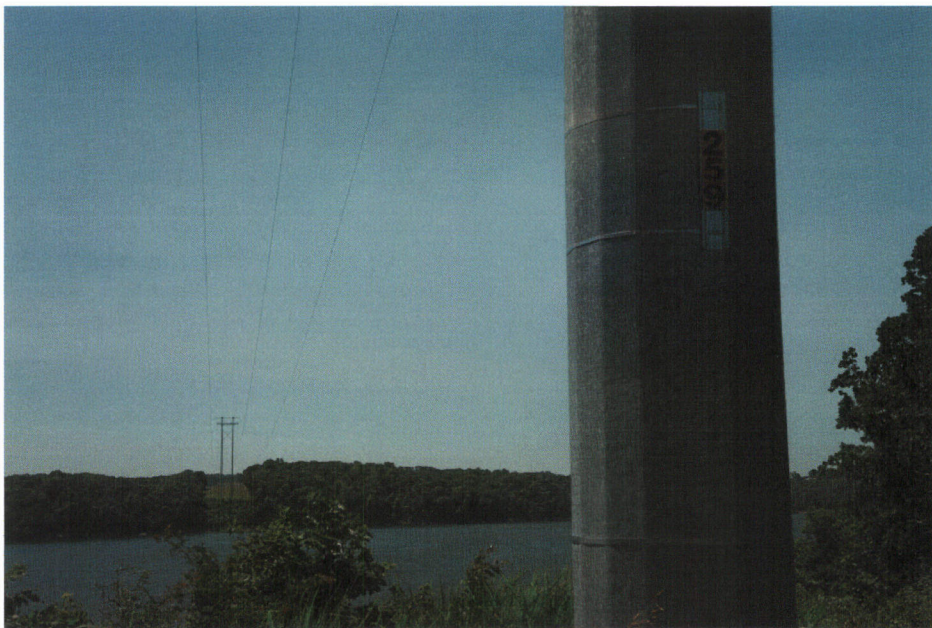
The flight proceeded to the southeastern branch of Stockton Lake in southwest Missouri (Tab AA2). Approximately 7 minutes prior to the mishap, the flight was established at 300 feet AGL. From that time to the mishap, the flight flew over mildly rolling terrain before reaching the lake shoreline. The MP experienced 52 audible "ALTITUDE, ALTITUDE" alerts from the aircraft voice messaging system over those 7 minutes, indicating his altitude was below the 300 feet AGL advisory altitude he had set (Tab N1). Throughout this sequence, his altitude indicated as low as 120 feet AGL. The MP did not appear to react to any of those alerts by maneuvering the aircraft vertically to correct the deviation or stop the altitude advisories. The MP was also whistling in the intercom throughout this sequence. En route to the lake, the MFL made a radio call identifying a tower 2 miles southeast of the formation, which the MP acknowledged by calling "contact," indicating he saw the tower the MFL had called out (Tab N1). As the flight reached the southeast corner of the lake, the MP executed a turn from south to west utilizing approximately 80° right bank and the nose dropped to 6° of dive. The predictive ground collision avoidance system (PGCAS) generated a "PULL UP, PULL UP" audio warning and a "break X" in the HUD (Tab N1). The PGCAS warning is designed to alert the pilot that the aircraft will descend to less than 90 feet AGL on its current trajectory unless an aggressive, wings-level climb is initiated. The MP did not appear to react to these indications and continued to turn and descend toward two boats he saw on the water.

The MFL made a radio call that the flight was approaching power lines that cross the lake, to which the MP responded "2," indicating he heard the MFL's radio call but not necessarily that he had the obstruction in sight (Tab N1). Six seconds later, the MP flew at 130 feet above the water nearly directly over the first boat traveling northwest on the lake. The MP climbed slightly and acquired the second boat traveling southeast on the lake toward him. The MP maneuvered his aircraft in a shallow, left-turning descent to point in the direction of the boat.

At 140 feet AGL, 3° of descent, approximately 10° left bank, heading 283°, and 299 knots indicated airspeed (KIAS), the MA impacted and severed two cables that spanned the lake (Tab S2).



Close up of Stockton Lake mishap site on sectional map



View of mishap site towers and cables crossing Stockton Lake



Severed cable at mishap site

According to an article in the Springfield News-Leader, an employee of KAMO Electric Cooperative, the power company that operates the lines, stated the cables were protective static lines strung above three power transmission lines. Their purpose was to dissipate electrical charge from lightning strikes and prevent damage to the transmission lines (Tab O4). Pilot interviews and post-mishap pictures do not indicate that there were any markings on the wires (Tabs R and S2). According to the Federal Aviation Administration, the towers and cables were not required to be marked because they were not 200 feet AGL or higher (Tab O5).

The MP called “knock-it-off” on the radio and the MFL rejoined with the MP. The MP stated on the radio that he “hit those power lines.” The MFL did a visual check of the MA, and noted that the Maverick air-to-ground and Air Intercept Missile-9 (AIM-9) air-to-air missiles were damaged, as well as the suspension equipment under the left wing and the left wing tip. The Bomb Dummy Unit-33 (BDU-33) on the center station of the left Triple Ejection Rack (TER) was twisted, but all training munitions were still on the MA. On the right side of the MA, the MFL noted there was damage to the leading edge of the right horizontal stabilizer and base of the right vertical stabilizer. He also observed the MA was leaking some unknown fluid (Tab N1). The flight turned toward Whiteman AFB and coordinated their recovery plan with the Supervisor of Flying (SOF). The MP completed the structural damage and controllability checklists. The right hydraulic system eventually failed completely due to a cut hydraulic line in the leading edge of the right horizontal stabilizer, and the MP completed the hydraulic system failure checklist. The MP coordinated for an emergency landing on Runway 01 at Whiteman AFB. The MP flew an uneventful straight-in approach, taxied clear of the runway, and shut the aircraft down after post flight end of runway and engine shutdown procedures were completed.

e. Impact

The MA impacted the cables over the southeastern branch of Stockton Lake. The damaged pieces from the MA fell into the lake and were not recovered, including the damaged seeker heads of the Maverick and AIM-9 missiles, skin and structural pieces of the damaged flight control surfaces and suspension equipment, and the tail fin of the center station BDU-33 on the left TER. The cables and power lines are owned by NW Electric Power Cooperative, Inc., and operated by KAMO Electric Cooperative, Inc. The severed cables fell into the lake and were subsequently removed by the power company. One section of cable was not removed and is located at the base of the power line tower on the north shore of the lake (Tab S2).

f. Egress and Aircrew Flight Equipment (AFE)

Not applicable.

g. Search and Rescue (SAR)

Not applicable.

h. Recovery of Remains

Not applicable.

5. MAINTENANCE

a. Forms Documentation

The 442nd Aircraft Maintenance Squadron (AMXS), 442nd Maintenance Group, Whiteman AFB, Missouri, maintained the aircraft forms for the MA. Maintenance is documented on Air Force Technical Order (AFTO) 781 series forms and in the Integrated Maintenance Data System (IMDS). AFTO 781 series forms are hard copy forms used to document various maintenance actions. They are maintained in a binder that is specifically assigned to each aircraft. IMDS is an automated database of aircraft discrepancies, maintenance repair actions and flying history. A comprehensive review of all AFTO 781 series forms and IMDS was accomplished to determine airworthiness up to the point of the mishap (Tab D1 to D4). After the MP returned to base and landed, the MA total aircraft time was 8340.3 hours. A thorough review of active and historical AFTO Form 781 series aircraft maintenance forms revealed no evidence of mechanical, structural or electrical failure in the previous 120 days (Tab D2 to D3). The MA flew three sorties for 4.2 flight hours following a number 2 scheduled Phase Inspection. The first sortie out of the Phase Inspection (PI) was a Functional Check Flight (FCF) on 13 May 2013, which landed with no discrepancies. On 21 May 2013, the aircraft flew a local sortie and landed with no discrepancies (Tab D3.3). There were no discrepancies in the active AFTO 781 series forms and 15 non-grounding delayed discrepancies at the time of the mishap (Tab D2).

There is no evidence that aircraft forms and documentation were relevant to this mishap.



A-10C 79-0164 Forms Binder



MA with visible damage to rudder cap and horizontal stabilizer

b. Inspections

Nine days prior to the mishap, the MA completed a FCF that closed out the Number 2 PI that began on 10 April 2013. The night prior to the mishap, the MA had a combined Basic Post Flight/Preflight (BPO/PR) inspection accomplished (Tab D2.3). The BPO is required at the end of the flying period. The PR is current for 72 hours prior to the next flight. The BPO/PR was current at the time of the mishap. A production superintendent signed the exceptional release (ER), which serves as a certification that the active forms were reviewed, ensuring the aircraft was safe for flight (Tab D2.3 and 2.4). A 30-day document review was current and not due until 14 June 2013 (Tab D2.6). Mid-shift accomplished servicing on the MA in the early morning on the day of the mishap (Tab D2.3). There were no Time Compliance Technical Order (TCTO) inspections or overdue scheduled inspections (Tab D2.6). The PI was last accomplished starting on 10 April 2013 and completed on 13 May 2013 at 8337.1 airframe hours. A PI is scheduled maintenance regularly performed on Air Force aircraft at specific flying hour intervals. The A-10C PI cycle consists of two 1000 flight hours inspections that are offset by 500 flight hours.

There is no evidence that the MA had any scheduled maintenance that was overdue or would have grounded the MA.

c. Maintenance Procedures

Review of the MA's AFTO 781 series forms and IMDS revealed all required maintenance actions were in compliance with standard operating procedures (Tab D2 to D4). Upon inspection of the damage on the aircraft, protective covers were installed to protect the aircraft from potential environmental damage, the effects of adverse weather, and foreign object ingestion. The MA was de-armed, impounded for investigation, and isolated in hangar 1117 with controlled access.

There is no evidence that maintenance procedures on the MA were relevant to the mishap.

d. Maintenance Personnel and Supervision

The training records for applicable 442 AMXS maintenance personnel were reviewed and revealed minor discrepancies. All personnel had adequate training and experience (Tab D4).

There is no evidence that maintenance training or supervision were relevant to the mishap.

e. Fuel, Hydraulic and Oil Inspection Analysis

Wright-Patterson AFB Laboratory testing and analysis of the fuel and hydraulic fluid samples all passed (Tab D3.4). Joint Oil Analysis Program (JOAP) records indicate both engines were code "Alpha," a designation given when there is no adverse trending analysis evident that would halt continued flying operations (Tab D3.4).

There is no evidence to indicate that fluids were relevant to the mishap.

f. Unscheduled Maintenance

Review of AFTO 781 series forms and IMDS revealed 15 unscheduled maintenance discrepancies, none of which were sufficiently urgent or dangerous to warrant the MA's grounding or discontinued use (Tab D2.4 and D2.6).

There is no evidence that any unscheduled maintenance task was relevant to the mishap.

6. AIRFRAME, MISSILE, OR SPACE VEHICLE SYSTEMS

Overall, the aircraft suffered extensive damage from the cables that impacted the left side armament pylons. Additionally, the impact of the cables damaged training munitions. The aircraft returned to Whiteman AFB uneventfully after the mishap. The aircraft had damage to the right horizontal and vertical stabilizers (Tab S3).



Damage to BDU-33, TGM-65 Maverick, AIM-9, DRA



Damage to right vertical and horizontal stabilizer and right rudder cap

a. Brake System

The MA had normal braking available because the left hydraulic system was intact. The MP pulled the emergency brake handle in accordance with the controllability check checklist to provide a minimum of five brake applications. The brake system did not sustain any damage and operated normally on recovery of the aircraft.

b. Propulsion Systems

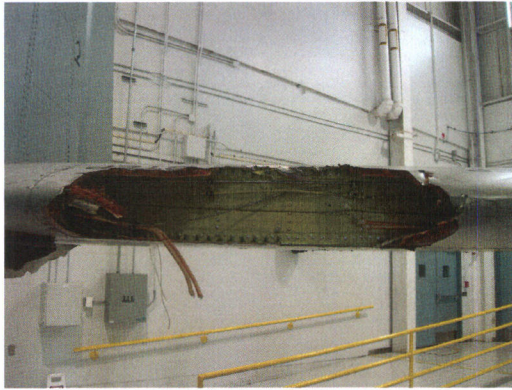
The MA is powered by two high-bypass turbofan General Electric TF34-GE-100A engines mounted in individual nacelles located on the aft fuselage. Each engine is capable of producing approximately 8,900 pounds of thrust. Both engines had been replaced for scheduled maintenance during the Number 2 PI. Upon landing and shutdown after the mishap, the number one engine (left engine) serial number 205565 had 7824.9 hours total engine operating time. The number two engine (right engine) serial number 205097 had 10,012 hours total engine operating time (Tab D3.5). Both engines were inspected and bore scoped with no findings or damage. The MP did not identify any engine anomalies.

c. Flight Control Systems

The MA experienced damage to the flight control surfaces due to debris and the cable stretching across the aircraft after initial impact, wrapping around the weapons pylons. The lower surfaces of the left speed brake, left wing cap, right horizontal and vertical stabilizers, and right rudder were impacted and sustained damage (Tab S3). Despite the visible damage, the MP maintained control of the MA and returned to base with no further events.

d. Hydraulic Systems

The MA has a left and right hydraulic system for primary and back-up control. The left system was intact. However, the cable struck the leading edge of the right horizontal stabilizer, removing a portion of the leading edge, and damaging the right system hydraulic line to the right rudder (Tab S3). The break in the line compromised the right hydraulic system to the point that the MP attempted to isolate it to prevent total hydraulic failure. With the right system failure, the MP had no control of the slats, speed brakes, and air-refueling door. The MP had control of the MA to land safely back at Whiteman AFB. Due to the break in the hydraulic line, the right system was depleted of fluid, driving the need to replace the right hydraulic pump.



Severed/damaged hydraulic, electrical (lighting), avionics, and manual flight control lines



Damage to right rudder bottom cap and hinge

e. Armament and Weapon Systems

The MA impacted the cable on the front of the left wing across the training munitions and pylons. After initial impact, the damaged cable wrapped around the station 3 pylon which had a training TGM-65 Maverick missile. This training missile contained no explosive material. Its purpose is to use the seeker head and guidance system to practice targeting (Tab S3). Additionally, the Dual Rail Assembly (DRA) installed on Station 1 and training AIM-9 Heat-seeking Sidewinder missile loaded on the right rail of the DRA also sustained damage from initial impact with the cable (Tab S3). The AIM-9 training missile contained no explosive material and is used by the pilot to practice employment of the AIM-9. One BDU-33 had two stabilization fins knocked off, but none of the practice bombs were released during the mishap sortie (Tab S3). The 25-pound BDU-33 contains a small explosive charge that produces smoke for marking.



Training TGM-65 missile



Dual Rail Assembly (DRA)



Training AIM-9 missile



BDU-33 practice bomb

7. WEATHER

a. Forecast Weather

The 509th Operations Support Squadron (OSS) weather flight provided the mission execution forecast (MEF) for Whiteman AFB on 22 May 2013 (Tab F1). Winds were expected to be from 280° at twelve knots with a temperature of 21° C (69° F). Anticipated visibility was 7 statute miles with a 4000 foot broken ceiling and no forecast icing or turbulence. The Truman MOA forecast was for broken clouds 3000-7000 feet AGL, light rain showers and possible light, occasionally moderate turbulence from 14,000 to 18,000 feet.

b. Observed Weather

The observed weather from the MFL's HUD showed the tops of the broken deck at approximately 4000 feet AGL and the bottoms at approximately 3000 feet AGL with unrestricted flight visibility while in the Truman C MOA. Following AAR, the MF descended through a break in the clouds while maintaining VFR, and continued to the bottom of the MOA. The MF departed the MOA low level after a short delay and proceeded on a south-southwesterly heading toward Stockton Lake. The MF experienced no weather issues (Tab F2).

c. Space Environment

Not applicable.

d. Operations

Weather was within operational parameters.

8. CREW QUALIFICATIONS

a. Mishap Pilot

(1) Qualification

The MP is a fully qualified A-10C Instructor Pilot (IP) (Tab G5). All necessary flight currencies were up-to-date and all required training for the planned mission was current in accordance with AFI 11-2A-OA-10, Volume 1 (Tab G1.1.6.1). On 26 October 2012, the MP performed his most recent instrument qualification evaluation in the A-10C, and he completed his mission qualification evaluation on 29 August 2012 (Tab G2.1.2).

(2) Experience

The MP is a Senior Pilot with 2359.3 hours of military flying time prior to the mishap. Of this total, he had 1694.2 hours of primary A-10 time, with 442.2 hours as an A-10 IP (Tab G1.1.1). He is an experienced combat pilot with 354.1 combat hours, and is also a qualified FCF pilot (Tab G5). He had previously attended A-10 Weapons Instructor Course (WIC) in Class 07B, but was removed from training in October 2007 due to failure to meet the requirements of the syllabus (Tab G4). The MP had flown three sorties in the 2 weeks prior to the mishap. The MP had flown his latest sortie the night of 21 May 2013, one day prior to the mishap (Tab G1.1.4).

The MP's flight time during the 90 days before the mishap is as follows (Tab G1.1.2):

	Hours	Sorties
Last 30 Days	8.7	7
Last 60 Days	13.7	14
Last 90 Days	20.1	21

A-10C, T/N 79-0164, 22 May 2013

b. Mishap Flight Lead

(1) Qualification

The MFL is a fully qualified A-10C IP (Tab G5). All necessary flight currencies were up-to-date and all required training for the planned mission was current with AFI 11-2A-OA-10, Volume 1 (Tab G1.2.6.1). On 17 September 2012, the MFL performed his most recent instrument qualification evaluation in the A-10C, and he completed his mission qualification evaluation on 14 November 2012 (Tab G2.2.2).

(2) Experience

The MFL is a Senior Pilot with 1955.0 hours of military flying time prior to the mishap. Of this total, he had 1660.6 hours of primary A-10 time, with 71.1 hours as an A-10 IP (Tab G1.2.1). He is an experienced combat pilot with 215.5 combat hours, and is also a qualified FCF pilot (Tab G5). The MFL had flown two sorties in the 2 weeks prior to the mishap. The MFL had flown his latest sortie on 13 May 2013 (Tab G1.2.4).

The MFL's flight time during the 90 days before the mishap is as follows (Tab G1.2.2):

	Hours	Sorties
Last 30 Days	7.7	7
Last 60 Days	11.4	10
Last 90 Days	24.2	18

There is no evidence to suggest crew qualifications were a factor in this mishap.

9. MEDICAL

a. Qualifications

At the time of the mishap, the MP was fully qualified for flight duties without restrictions. His most recent flight physical was accomplished on 23 June 2012 and revealed he was medically qualified for flight duties and also qualified for World Wide Duty. The medical record was reviewed and found to be current. The MP displayed no physical or medical limitations prior to the MF. A valid and current AF Form 1042, *Medical Recommendations for Flying or Special Operational Duty*, was reviewed.

At the time of the mishap, the MFL was fully qualified for flight duties without restrictions. His most recent flight physical was accomplished on 9 September 2012. He was medically qualified for flight duties, and also qualified for World Wide Duty. The MFL displayed no medical or physical limitations prior to the mishap. The medical record was reviewed and found to be current. The MFL does have a waiver for a medical condition that expires in September 2013. It was not overdue at the time of the mishap. A valid and current AF Form 1042 was reviewed.

b. Health

The medical and dental records of the MP and MFL were reviewed. Examination of the records revealed the MP and MFL to be in excellent health with no recorded recent medical illnesses or performance limiting conditions. The Preventative Health Assessments (PHA) of both the MP and MFL were current.

On the advice of his attorney, the MP declined to answer questions from the AIB, and therefore was unavailable for interview. The MP's 72-hour and 14-day histories obtained by the Interim Safety Investigation Board were privileged and unavailable to the AIB.

The MFL's non-privileged 72-hour and 14-day histories were obtained from a direct interview with the MFL and a questionnaire completed by him in his own handwriting. The MFL's histories were reviewed and demonstrated no performance limiting concerns or illnesses.

c. Toxicology

Within one hour of landing after the mishap, commander-directed toxicology testing was accomplished on the MP and MFL. Blood and urine samples were submitted to the Armed Forces Institute of Pathology (AFIP) for toxicological analysis. This testing included carbon monoxide, cyanide and ethanol levels in the blood, and drug testing of the urine samples.

Carbon monoxide and cyanide levels were performed on the samples from the MP and MFL. All results were normal.

AFIP examined the blood of the MP and MFL for ethanol at a cutoff of twenty milligrams per deciliter. Ethanol test results were negative in both the MP and MFL.

The urine of both MP and MFL were screened by AFIP for amphetamine, barbiturates, benzodiazepines, cannabinoids, cocaine, opiates and phencyclidine by immunoassay or chromatography. The results were negative for both the MFL and MP.

d. Lifestyle

The MP was not available for questioning. Therefore, the AIB was only able to use information gathered from interviews of other squadron members. None of the witnesses interviewed disclosed information indicating that the MP had demonstrated any behavior, stress, distraction or unusual habits in the days leading up to the mishap that would have contributed to the mishap.

There is no evidence that any behavior, stress, distractions or unusual habits displayed by the MFL contributed to the mishap. Neither witness testimonies nor the 72-hour history of the MFL revealed evidence of abnormal behaviors that contributed to the mishap.

e. Crew Rest and Crew Duty Time

AFI 11-202, Volume 3, requires pilots have proper crew rest prior to performing flying duties. That instruction defines normal crew rest as a minimum 12-hour non-duty period before the Flight Duty Period begins. Its purpose is to ensure the aircrew member is adequately rested before performing flight or flight-related duties. Crew rest is free time, and includes time for meals, transportation, and rest. Rest is defined as a condition that allows an individual the opportunity to sleep.

The MP was not available for questioning. MP had flown the night before the mishap. MP's civilian time card indicated he had complied with crew rest requirements.

The MFL's 72-hour history was unremarkable. MFL had 9 hours of sleep one day prior to the mishap, and 8 hours on the day of the mishap.

10. OPERATIONS AND SUPERVISION

a. Operations

The mishap occurred during the second flying period of a two-go day. The overall operations tempo was normal. The 442 FW recently stood up an Active Association as part of the Air Force's Total Force Integration. The active duty pilots of the 495th Fighter Group, Detachment 303, were grounded due to Air Combat Command's (ACC) flying hour reduction. In addition, the 303 FS was flying reduced sortie durations due to AFRC flying hour cutbacks. Pilots interviewed by the board stated that they were doing less LATN training since March because of the shorter sortie durations. The MP had not flown LATN since 28 Mar 2013 (Tab G1.1.5). The MFL flew LATN on 1 May 2013 (Tab G1.2.5). However, both pilots were current in LATN and therefore this was not considered a factor in the mishap.

b. Supervision

Operations supervision at the squadron level was fully engaged (Tab R9 and R10). The 303 FS has an active Operational Risk Management (ORM) program (Tab K1.4). Prior to each flight brief, pilots assess their risk factors (ORM) for their planned mission. The MP completed the ORM worksheet for the MS with a total of 9 points (six for surface attack tactics, one for weather being between 3000 and 5000 feet and two for Category-two planned low altitude operations at 300 to 500 feet). The SOF/Operations Supervisor (on-duty squadron supervisor overseeing all daily missions) reviewed and validated the MF's overall risk assessment during the pre-mission briefing. Supervision was not a factor in the mishap.

11. HUMAN FACTORS

a. Introduction

The board considered all of the human factors elements contained in AFI 91-204, Attachment 5, *Department of Defense Human Factors Analysis and Classification System* (DOD HFACS). Two human factors were identified as causal to this mishap: risk assessment-during operation and lack of discipline. Three factors were identified as substantially contributing: channelized attention, complacency, and challenge and reply.

b. Applicable factors

(1) Risk Assessment - During Operation (AE201)

Risk Assessment – During Operation is a factor when the individual fails to adequately evaluate the risks associated with a particular course of action and this faulty evaluation leads to inappropriate decision and subsequent unsafe situation. This failure occurs in real-time when formal risk-assessment procedures are not possible.

The MP's response to the MFL's radio call identifying the cables, along with the MP's call after the mishap that he "hit those power lines," indicate he was aware that the cables were in the vicinity and were a factor to the MF. He did not call "contact" as he had done previously during the LATN (Tab N1). The lack of a "contact" call indicated he did not see the cables. Failure to appropriately address the risk the cables posed to the flight and the people on the boat led to an inappropriate decision to continue his maneuver to make a low altitude pass over the boat. This created an unsafe situation and was causal to the mishap.

(2) Violation - Lack of Discipline (AV003)

Violation - Lack of Discipline is a factor when an individual, crew or team intentionally violates procedures or policies without cause or need. These violations are unusual or isolated to specific individuals rather than larger groups. There is no evidence of these violations being condoned by leadership. These violations may also be referred to as "exceptional violations."

Interviews with eleven 303 FS pilots who know and have flown with the MP indicate that he does not regularly violate flight rules or operating procedures (Tab R). The MP knows the rules and normally adheres to them. In this case, the MP intentionally and unnecessarily maneuvered his aircraft in violation of flight rules and operating procedures contained in AFI 11-202, Volume 3; AFI 11-2A-10C, Volume 3; and AFI 11-2AOA-10V3/442 FW Supplement 1 (Tabs BB1 through BB3). The lack of discipline demonstrated by his attempt to do a low pass over the boat in violation of these directives created an unsafe situation and was causal to the mishap.

(3) Channelized Attention (PC102)

Channelized Attention is a factor when the individual is focusing all conscious attention on a limited number of environmental cues to the exclusion of others of a subjectively equal or higher or more immediate priority, leading to an unsafe situation. It may be described as a tight focus of attention that leads to the exclusion of comprehensive situational information.

The MP was clearly focused on flying over the boats on the lake. This focus caused him to exclude information being made available to him through MFL radio calls and auditory and visual advisories from the aircraft. It also prevented him from considering the highest priority task at the time—gaining visual contact with the cables. By channelizing his attention on the boat in the vicinity of the cables, the MP allowed an unsafe situation to develop, substantially contributing to the mishap.

(4) PC208 Complacency (PC208)

Complacency is a factor when the individual's state of reduced conscious attention due to an attitude of overconfidence, undermotivation or the sense that others "have the situation under control" leads to an unsafe situation.

While it is not unusual to have occasional altitude alerts when operating at low altitude over rolling terrain, the MP experienced 52 altitude alerts and one ground collision warning in the 7 minutes prior to the mishap. The MP's lack of response to these advisories, along with the fact that he was audibly whistling over the intercom throughout that period (Tab N1), demonstrated the MP's overconfidence during low altitude operations. This behavior continued up to impact with the cables. Complacency substantially contributed to the mishap.

(5) Challenge and Reply (PP108)

Challenge and reply is a factor when communications did not include supportive feedback or acknowledgement to ensure that personnel correctly understand announcements or directives.

Eleven 303 FS pilots were asked to explain the squadron standard for identification and avoidance of obstacles during low altitude operations. All but the MFL adhere to the same technique (Tab R). The MFL stated that, depending on whom he was flying with, he did not necessarily expect to hear his wingman call "contact" to indicate that the wingman had a declared obstacle in sight. The MFL said that with a more experienced wingman, like the MP, a response of "2" would be sufficient to indicate that he heard the call identifying the obstacle and had the obstacle in sight. Only a "no joy" call would be definitively interpreted by the MFL that the wingman did not see the obstacle (Tab R13). In that case, the wingman would need amplifying information to locate the obstacle, or a directive call to maneuver to avoid it. In the case of the MF, the MP responded "2" when the MFL called out the cables over the lake, but the MP did not have them in sight, contrary to the MFL's assumption. The MFL did not confirm that the MP had the cables in sight when the MP responded "2," which is the normal technique of every other pilot interviewed. A no-notice review of 7 HUD videos conducted by the board during the investigation revealed that in all cases when an obstacle was encountered,

communication continued until all flight members called “contact” with the obstruction. That communication is not directed or procedural, nor is it written in the squadron standards. However, it appears to be the accepted, and perhaps the expected, flow of communications in this situation. Had the MFL utilized this accepted/expected technique, he may have gotten the MP’s attention and prevented the impact with the cables. Lack of the accepted/expected challenge and reply technique substantially contributed to the mishap.

12. GOVERNING DIRECTIVES AND PUBLICATIONS

a. Publically Available Directives and Publications Relevant to the Mishap

- (1) AFI 11-2A-OA-10, Volume 1, *A/OA-10—Aircrew Training*, 31 August 2006
- (2) AFI 11-2A-OA-10, Volume 2, *A/OA-10—Aircrew Evaluation Criteria*, 16 November 2005
- (3) AFI 11-2A-10C, Volume 3, *A-10C—Operations Procedures*, 22 March 2012
- (4) AFI 11-202, Volume 3, *General Flight Rules*, 22 October 2010
- (5) AFI 21-101, *Aircraft and Equipment Maintenance Management*, Incorporating Through Change 1, 16 August 2011; AFI 21-101_AFGM4, 19 April 2013
- (6) AFI 51-503, *Aerospace Accident Investigations*, 26 May 2010
- (7) AFI 91-204, *Safety Investigations and Reports*, 24 September 2008, DOD HFACS
- (8) AFMAN 91-223, *Aviation Safety Investigations and Reports*, 16 May 2013

NOTICE: All directives and publications listed above are available digitally on the AF Departmental Publishing Office internet site at: <http://www.e-publishing.af.mil>.

b. Other Directives and Publications Relevant to the Mishap

- (1) AFI 11-2AOA-10, Volume 3, *442 FW Supplement 1, A/OA-10 – Local Operating Procedures (Chapter 8)*, 1 December 2009 (Tab BB3)
- (2) *303 FS Standards*, 1 April 2013 (Tab BB4)

c. Known or Suspected Deviations from Directives or Publications

By flying his aircraft below minimum approved altitude over a vessel on Stockton Lake with a known obstruction in the area, but not in sight, the MP violated the following directives:

- (1) AFI 11-202, Volume 3

(a) Paragraph 5.1.1., Reckless Flying. The [Pilot in Command] PIC is responsible for ensuring the aircraft is not operated in a careless, reckless or irresponsible manner that could endanger life or property. (Tab BB1)

(b) Paragraph 5.1.3., Unauthorized Flight Demonstrations. Unauthorized or impromptu flight demonstrations, maneuvers, events or “fly-bys” are prohibited. AFI 11-209, *Air Force Participation in Aerial Events*, addresses authorized flight demonstrations. (Tab BB1)

(c) Paragraph 5.14., Altitude Requirements. Except for MAJCOM-approved aerial demonstrations/events or during takeoff or landing, do not operate aircraft:

(i) Paragraph 5.14.4., Non-congested Areas. Over non-congested areas at an altitude of less than 500 ft. AGL except over open water, in special use airspace (SUA), or in sparsely populated areas. Under such exceptions, pilots must not operate aircraft closer than 500 ft. to any person, vessel, vehicle, or structure. (Tab BB1)

(2) AFI 11-2A-10C, Volume 3

(a) Paragraph 3.17.2. Fly line abreast formation at or above 300 feet AGL. When flying in formation below 300 feet AGL the wingman will be directed to a wedge, trail, or combat trail formation position. Training in the 300 to 100 feet AGL altitude block will be in short segments consistent with real-world risks and realistic tactical considerations. (Tab BB2)

(b) Paragraph 3.17.4. At altitudes below 1,000 feet AGL, wingmen will not fly at a lower AGL altitude than lead. (Tab BB2)

(c) Paragraph 3.17.7. If unable to visually acquire or ensure lateral separation from known vertical obstructions, which are a factor to the planned route or flight, flight leads will direct a climb to ensure vertical separation 2 [Nautical Miles] NM prior to the obstacle. (Tab BB2)

(3) AFI 11-2AOA-10C, Volume 3, 442 FW Supplement 1, paragraph 8.24.4.1. The minimum altitude is 300' AGL unless operating in designated areas for lower operations (i.e. Restricted Areas, pre-defined corridors, etc...). (Tab BB3)

13. ADDITIONAL AREAS OF CONCERN

Not applicable.

25 June 2013

WILLIAM A. LYONS, Colonel, USAFR
President, Accident Investigation Board

STATEMENT OF OPINION

**A-10C, T/N 79-0164, 70 Nautical Miles South of Whiteman AFB MO
22 May 2013**

Under 10 U.S.C. § 2254(d) the opinion of the accident investigator as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report, if any, may not be considered as evidence in any civil or criminal proceeding arising from the accident, nor may such information be considered an admission of liability of the United States or by any person referred to in those conclusions or statements.

1. OPINION SUMMARY

On 22 May 2013 at 1548 local time, A-10C, T/N 79-0164, call sign DEUCE 02, struck two static protection cables that cross Stockton Lake in southwest Missouri. The MA sustained damage to the left wing and the right horizontal and vertical tails, as well as the Maverick and AIM-9 missiles and suspension equipment on the right wing. The MA's right hydraulic system failed after the hydraulic fluid was depleted from a cut hydraulic line in the leading edge of the right horizontal stabilizer. Total repair cost for the MA is \$698,858.69. The impact severed the two cables, operated by KAMO Electric Cooperative. Cost of repair of the cables is unknown. The MP safely recovered the MA to Whiteman AFB.

I find by clear and convincing evidence that the cause of the mishap was the MP's error in judgment and lapse in flight discipline. The MP maneuvered his aircraft for a low pass over a boat on Stockton Lake in violation of published flight rules and operating procedures, resulting in significant damage to the MA and civilian property. Additionally, I find by a preponderance of the evidence that the MP's channelized attention and complacency, and the MFL's failure to direct the MP to maneuver to avoid the cables in accordance with widely-accepted techniques, substantially contributed to the mishap.

The MP declined to provide testimony to the AIB. I developed my opinion by analyzing the MP's and MFL's HUD videos from the MF; the MA systems and maintenance documentation; and interviews with the MFL, 303 FS supervisors and other pilots, and maintenance personnel involved with the launch and recovery of the mishap sortie.

The MF had complied with crew rest requirements. The mission planning, briefing, step to the aircraft and ground operations were uneventful. The MFL changed the planned flow of the mission while airborne and briefed the new flow to the MP, who did not ask any questions about the updated plan. Except for the MFL's altitude during the simulated Maverick attacks in the Truman MOA, mission elements up to the LATN portion of the mission were uneventful.

The route of flight for the LATN took the mishap flight over mildly rolling terrain. In reviewing the MP's HUD video, he did not noticeably react to 52 altitude advisories nor a ground collision avoidance warning he received over the 7 minutes leading up to the mishap. The MP was audibly whistling during this period of time. Also during the LATN, prior to reaching the lake, the MF encountered a tower along its route of flight. The MFL called the obstruction on the

radio, and the MP responded “contact.” While maneuvering over the southeast corner of the lake, the MFL called over the radio that the MF was approaching power lines that crossed the lake from north to south. The MP responded “2,” but did not call contact with the power lines. The MP’s response to the MFL’s radio call, in conjunction with a call after the mishap that he “hit those power lines,” indicated that he likely understood there was an obstruction in the vicinity that was a factor to the MF.

The MP gained tally on two boats on the lake. The MP descended toward the first boat and overflowed it at 130 feet AGL, 26 seconds prior to the mishap. Passing the first boat, the MP climbed slightly, got sight of the second boat and entered a shallow left-turning descent toward the boat. The MP was in a 3° dive, approximately 10° left bank, heading 283° at 299 KIAS, when he began an aggressive pull up at 140 feet AGL, either as a result of striking the cables or picking up visual contact with them just prior to impact.

2. CAUSE

a. Risk Assessment – During Operation

The MP’s radio calls prior to and immediately after the mishap indicated that he understood there were power lines in the vicinity of the MF. He did not call “contact,” as he had done previously during the LATN, indicating he did not see the wires. Failure to appropriately address the risk the unseen cables posed to his aircraft and the people on the boat led to an inappropriate decision to continue his unsafe maneuver to make a low altitude pass over the boat. This was causal to the mishap.

b. Violation – Lack of Discipline

Interviews with the MP’s peers revealed that the MP is normally a disciplined and safe pilot. The MP knows the rules and regularly adheres to them. In this case, the MP intentionally and unnecessarily maneuvered his aircraft in violation of flight rules and operating procedures. While it seems to be anomalous for the MP to demonstrate this type of lapse in flight discipline, his attempt to do a low pass over the boat in violation of multiple directives created an unsafe situation and was causal to the mishap.

3. SUBSTANTIALLY CONTRIBUTING FACTORS

a. Channelized Attention

The MP’s focus on maneuvering his aircraft toward the boat on the lake took his attention away from gaining visual contact with the cables. He did not react to the aircraft advisories or the MFL’s radio call due to his focus on the boat. The MP’s channelized attention allowed an unsafe situation to develop, substantially contributing to the mishap.

b. Complacency

The MP demonstrated a high level of comfort flying at low altitude, which I believe resulted in the MP's complacency during low altitude operations. His overconfidence resulted in reduced attention to the threat posed by the cables in the mishap area. This substantially contributed to the mishap.

c. Challenge and Reply

The MFL uses a communication technique for obstacle avoidance that is significantly different from other pilots in the 303 FS interviewed. The MP did not reply "no joy" when the MFL pointed out the cables, leading the MFL to assume the MP saw the cables because he acknowledged the call. Every other pilot interviewed indicated that if a wingman does not reply "contact" to an obstruction call, as the MP had done previously during the LATN, the flight lead should provide additional information or direct the wingman to maneuver if necessary to avoid the obstacle. If the MFL had utilized the widely-accepted technique, he may have gotten the MP's attention and prevented the MP from continuing his dive toward the boat and cables. Lack of effective challenge and reply communications substantially contributed to the mishap.

4. CONCLUSION

I find by clear and convincing evidence that this mishap was caused by poor judgment and lack of discipline on the part of the MP. Further, I find by preponderance of the evidence that the MP's channelized attention and complacency, along with the MFL's lack of effective challenge and reply, substantially contributed to this mishap.

25 June 2013

WILLIAM A. LYONS, Colonel, USAFR
President, Accident Investigation Board

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