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AIRCRAFT ACCIDENT INVESTIGATION

OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

AUTHORITY: Under the authority of Air Force Regulation (AFR) 110-14, the Ninth Air Force Commander appointed Lt Col Warren C. Boyes to conduct an aircraft accident investigation into the circumstances surrounding a near miss incident between a civilian aircraft (registration number N1428DP) operated by Thomas L. Scruggs of Jupiter, Florida and an Air Force Reserve (AFRES) F-16A aircraft (serial number 81-0800) (Tab Y-1). Mr. Scruggs alleges he sustained personal injuries and that his aircraft sustained substantial damage when he encountered the wake turbulence of an unknown military fighter aircraft on 7 July 1992, at approximately 9:39 a.m., Eastern Daylight Savings Time (EDT), 10 nautical miles west of Okeechobee, Florida. The investigation was conducted from 31 July to 13 August 1992. Technical Advisors assisting in this investigation were Major Peter N. Carey (Legal), Mr. Robert D. Rosenbloom, GM-13 (Legal), Capt Derek Rydholm (Operations), Capt Rex Meyer (Maintenance), and Mrs Lydia E. Sanchez (Administrative Support). (Tab Y-2, Y-3)

PURPOSE: An aircraft accident report is convened under AFR 110-14 to collect and preserve all relevant evidence for possible use in claims, disciplinary actions, adverse administrative proceedings, or for any other purpose deemed appropriate by competent authority. The investigation is designed to obtain factual information and is not intended to determine the cause of any given accident. In addition, the aircraft accident investigation officer may not draw conclusions nor make recommendations. This report is available for public dissemination under the Freedom of Information Act (U.S.C. 552 and AFR 4-33).

SUMMARY OF FACTS

1. History of Flight: On 7 July 1992, Major Gregg P. Steinhilpert was scheduled to lead a flight of four F-16A aircraft on a basic surface attack mission to Avon Park Gunnery Range located in restricted area R-2901. The aircraft and pilots were assigned to the 93rd Fighter Squadron, 482nd Fighter Wing, United States Air Force Reserve, based at Homestead Air Force Base, Florida. The flight was composed of Major Steinhilpert, Colonel Larry Twichell, Captain John Hart, and Lt Col Joseph Dunaway. (Tab K-1) The flight was filed under an Instrument Flight Rules (IFR) flight plan, to transit IR-34, a low level Military Training Route (MTR) which was properly scheduled and booked for the flight (Tabs K-1 and K-3). The flight's call sign was Mako 01 (wingmen call signs 02, 03, 04). While established on the published IR route at a location approximately 5 NM south of the southern border of the restricted area, Major Steinhilpert was forced to take evasive action to avoid a light civilian aircraft which he acquired visually in his flight path. (Tab V-1) No other member of the flight saw this airplane either visually or on radar (Tab V-1 through V-4). Later, Mako 01 flight was informed by the Range Control Officer (RCO) that a light aircraft had declared an inflight emergency

NUCLEAR REGULATORY COMMISSION

Docket No \_\_\_\_\_ Official Exh. No. 212  
In the matter of PFS  
Staff \_\_\_\_\_ IDENTIFIED   
Applicant \_\_\_\_\_ RECEIVED   
Intervenor \_\_\_\_\_ REJECTED \_\_\_\_\_  
Cont'g Off'r \_\_\_\_\_  
Contractor \_\_\_\_\_ DATE 7/1/02  
Other \_\_\_\_\_ Witness \_\_\_\_\_  
Reporter EM

PFS Exh. 212

and reported being "clipped by a jet" (Tab N-1). Major Steinhilpert directed his flight to cease all tactical maneuvering and weapons delivery by a "knock it off" call which all flight members acknowledged (Tab N-2). He rejoined his flight by elements and performed visual checks for any damage. No damage was noted and the flight returned to Homestead AFB and landed without incident. The 482nd Fighter Wing Public Affairs Office handled news media inquiries (Tabs Z-1 through Z-3).

On that same morning, Mr. Thomas L. Scruggs, 54, a licensed private pilot from Jupiter, FL, filed a Visual Flight Rules (VFR) flight plan with the St. Petersburg Flight Service Station to fly his Maule Model MX-7-180 aircraft (N148PD) from Peter O. Knight Airport (TPF) near Tampa, FL to Stuart Jet Center (SUA) in Stuart, FL. This flight plan was filed VFR direct at an altitude of 3,000 feet MSL (Tab K-4). Mr. Scruggs was aware of Restricted Area R 2901 and planned to contact Avon Operations to see if it was active and, if necessary, circumnavigate to the south. His route of flight would cross several published Military Training Routes (MTRs) which are clearly depicted on the current civilian aeronautical chart (Miami Sectional) (Tab R-1). One of these routes was IR 34 which is described as that airspace from 100 feet above the surface to an altitude of 3,000 feet above Mean Sea Level (MSL), 8 nautical miles either side of the route's centerline. The route is active every Monday through Friday, from 06:00 to 24:00 hours, Local Time (CUT) (Tab AA-3). Mr. Scruggs filed his flight plan for an altitude of 3,000 feet MSL but at some point descended to 1,400 feet (Tabs K-4 and N-1). As Mr. Scruggs crossed the centerline of IR-34 at 1,400 feet, he reported hearing an explosion and having his aircraft depart controlled flight and enter a left-hand spin (Tab O-3). Recovering from the spin at 800 feet, Mr. Scruggs reported his belief that his aircraft had been seriously damaged and had serious doubts about its airworthiness. He declared an emergency on the frequency used by Avon Operations and initially indicated he would land at Lake Okeechobee Airport (Tab N-1). He then apparently changed his mind and proceeded to fly 42 nautical miles to land at his original destination. He told an FAA investigator that he never saw another aircraft but only a "grey streak passing beneath him" (Tab O-3).

2. Mission: The purpose of Mako 01's flight was to accomplish Basic Surface Attack (BSA) training for its flight members. Mission elements included chased maneuvers at low altitude in order to achieve specific parameters. This maneuvering was done on a section of IR 34 (Military Training Route) which is specifically designated as a fighter maneuvering area. Following this, the flight was to fly in a pre-briefed four-ship box formation along the IR-34 route structure to Avon Park's "C/E" range. The planned range work was for the purpose of achieving Air Force Manual (AFM) 51-50 weapons qualification scores and the practice of basic F-16 surface attack weapons delivery. Specifically briefed range events included: High Altitude, High Angle Dive Bomb (HADB), Low Angle Low Drag (LALD), Long Range Dive Toss (LRDT), and High Angle Strafe (HAS). Following their range period, the flight was to return to and land at Homestead AFB under IFR control (Tab V-1).

The Federal Aviation Administration listed the purpose of Mr. Scruggs' flight as "Personal" (Tab O-3).

3. Briefing and Preflight: Preparation for this mission began during the previous Unit Training Assembly (UTA), at which time, the pilots were briefed and received academic training on basic surface attack. Each of the flight members were familiar with the flight profile; all of the flight members were highly experienced. All flight members had adequate crew rest prior to reporting for duty. Mission preparation on the morning of 7 July consisted of checking the weather, current Notices To Airmen (NOTAMS), and verification of each pilot's training requirements and currencies (Tab V-1). The mission was adequately briefed by the flight lead using the AFM 55-116 briefing guide, as supplemented by local directives and standardized procedures (Tab AA-1). The flight was filed on a stereo IFR flight plan (HST 11B, Tab K-1) which consists of a Standard Instrument Departure (SID), followed by entry into the Military Training Route (MTR) IR-34 at point D and following the route, as published (R-1-2), to R-2901 via points E, F, G, H, I, J to the exit point K at the Restricted Area boundary (Tab K-2). Specifically briefed were mid-air collision avoidance procedures and coordinated radar and visual lookout. All administrative prerequisites for the flight were accomplished in accordance with applicable regulations, i.e., Flight Crew Information File (FCIF) signed off, Critical Action Procedures (CAPS) tests accomplished, Flight Order signed out, etc. Ground operations were conducted without significant deviations (Tab V-1).

On the morning of 7 July 1992, Mr. Scruggs contacted the Flight Service Station (FSS) in St. Petersburg, FL for the purpose of filing his flight plan. He did not request information on active Military Training Routes (MTRs) along his route of flight and did not receive a weather briefing or current NOTAM update from Flight Service (Tab V-6).

4. Flight: The flight began with formation takeoffs at 0914 EDT under an IFR flight plan and clearance. A Standard Instrument Departure (SID) was flown to the IR 34 alternate entry point D. Between points F and H, a designated maneuver area, the flight performed chased low altitude tactical maneuvers (Tab V-1). By point H, the flight was formed into a standard "box" formation with the wingmen (Makos 02, 04) flying line abreast of their element leaders (Makos 01, 03) with 6,000 to 12,000 feet lateral spacing. The second element was between 5 and 7 Nautical Miles (NM) behind the front element and offset slightly to the west of the leaders (Tabs V-1 and V-3). The flight proceeded in this formation to restricted area R-2901 via the published lateral and vertical confines of the military low level training route, IR-34 (Tab AA-3). At 0936 Mako flight checked in on Avon Operation's (Avon Ops) frequency. Avon Ops advised that the range was cold and no aircraft were in the designated range holding areas. The current altimeter setting was passed and Mako flight was cleared to contact the C/E Range Control Officer (RCO) (Tab N-1). At point Juliet of the published IR route, Major Steinhilpert, flying as Mako 01,

visually observed a light aircraft directly ahead of him on a collision course at a distance estimated to be less than one mile. His instinctive reaction was to initiate a 6 G evasive maneuver to pass above the other aircraft. Major Steinhilpert testified that the closest distance between the two aircraft was between 500 to 700 feet (Tab V-1). The flight entered the range and began its briefed events. After the third weapons delivery pass, the RCO (Call Sign, Charlie Range) informed the flight that a light aircraft had reported being "clipped by a jet" and had declared an emergency (Tab N-2). Mako 1 reported his sighting of a light civilian aircraft just south of the range and terminated tactical maneuvering at that time. The flight was rejoined by elements to visually check each fighter for any sign of damage then returned to base (Tab V-1).

On 7 July 1992, at exactly 0914 local time (EDT), Mr. Scruggs contacted Avon Operations (Avon Ops) to determine if the restricted airspace was in use. Avon Ops advised that the "entire range was hot with fast movers" (Tab N-1). At 0928, Mr. Scruggs again contacted Avon Ops and advised that he would hold south of the restricted area and then head east at 1,400 feet. Avon Ops again advised Mr. Scruggs that the range was still hot; Mr. Scruggs acknowledged this advice (Tab N-1). At 0941, Mr. Scruggs in aircraft N148PD called Avon Ops and stated, "I've been hit by one of your jets." He stated that he didn't know how long he could keep his aircraft flying and declared an inflight emergency. (Tab N-1) At 0944, Mr. Scruggs advised Avon Ops that, although he had Lake Okeechobee airport in sight, he had decided instead "to try to get home to my home base." In the same transmission, he reported, "my struts are bent on one side, my door has blown open... don't even know if I have landing gear or not." (Tab N-1) Mr. Scruggs then overflowed several suitable landing airports, electing instead to fly 42 additional nautical miles to land at Stuart Airport, Florida (Tabs O-3 and R-1-1).

5. Impact: None.

6. Ejection Seat: Not Used.

7. Personal and Survival Equipment: Not Used.

8. Crash Response: Not Used.

9. Maintenance Documentation: A thorough review of the maintenance records for the Mako aircraft revealed no discrepancies that could have contributed to a near miss. All four F-16s had fully operational radars and anti-collision beacons (strokes) (Tab U-3). There were no overdue time compliance technical orders (TCIOs) on any of the Mako flight aircraft. (Tab H-1). All scheduled inspections were completed with no identified discrepancies (Tab H).

FAA examination of the airplane maintenance records of Maule Aircraft Model MX-7-180, Registration number N148DP, owned by Debra C. Scruggs, revealed that the last annual inspection was completed on 28 May 1992 and all required inspections were current as of the date of the mishap (Tab P-1).

10. Maintenance Personnel and Equipment: Not investigated.

11. Fluid Sample Analysis: No aircraft fluid samples were analyzed.

12. Aircraft and Aircraft Systems: Aircraft and Aircraft Systems: All four F-16s from Mako flight were inspected immediately after landing for any type of external damage with negative results. Additionally, a Quality Assurance team performed a special inspection of Major Steinhilpert's F-16A, SN 81-0800 for any minute evidence of a mid-air collision, also with negative results. (Tabs V-5, M-1 and M-2).

The FAA inspection of Mr. Scruggs' aircraft confirmed that no mid-air collision had, in fact, occurred (Tab O-3). Mr. Scruggs' aircraft had sustained substantial structural damage, however, to its left wing, left wing struts and fuselage (Tab P-1). According to the FAA inspector's accident report, it was indeterminable whether the damage was pilot induced or the result of airloads generated by Mako 01's vortex wake turbulence (Tab O-2).

13. Operations Personnel and Supervision: The mission was conducted under the authority of the 482nd Fighter Wing (AFRES) and the 93rd Fighter Squadron (FS). The flight was authorized by the 93rd FS Commander, Lt Col Thomas A. Dyches, USAFR. The flight was briefed by the flight lead, Major Gregg Steinhilpert, using AFR 55-116 briefing guides as supplemented by local guidance in the form of squadron standards. (Tab AA-1). The briefing was thorough and complete and all supervisory actions were properly accomplished. (Tabs V-1 through V-4)

14. Aircrew Qualifications: Review of aircrew flight records indicated that all four Air Force pilots were current and qualified to fly the mission in accordance with current regulations and directives. No past training deficiencies were noted (Tab E-2). Major Steinhilpert's military flying experience (Tab T-1) is as follows:

F-4D	Pilot, Instructor Pilot	2,275.3 hours
F-16A/B	Pilot, Instructor Pilot	438.3 hours
Other	Pilot	21.9 hours
T-37, T-38	Student Pilot	245.2 hours

Career Total (Military) 2,980.7 hours

	Sorties / Hours
Last 30 days	2 / 2.2
Last 60 days	12 / 10.9
Last 90 days	16 / 18.0

Mr. Thomas L. Scruggs holds a Private Pilot's License issued 17 Jun 1989 with an Airplane, Single Engine, Land rating. He reports to have 6,000 hours of Total Pilot Time and 78 hours in the six months immediately preceding his accident (Tabs O-1 and O-2).

15. Medical: Major Steinhilpert and the other members of his flight were all medically qualified for flight at the time of the accident (Tab E-1).

On the morning of 7 July, Mr. Scruggs did not possess a valid medical certificate issued under Federal Aviation Regulations Part 67 in violation of FAR 61.3 para (c). An enforcement action in regard to this violation is being processed by the Atlanta Regional Office of the FAA (Tab O-1). Subsequent to the mid-air mishap, Mr. Scruggs later that same day at approximately 1530, passed an FAA medical examination. The FAA designated medical examiner was Dr. Bruce C. Equi, D.O., of Stuart, FL. (Tab O-1). It appears that Mr. Scruggs may have falsified information on his medical application regarding the date of his then most current medical examination (Tab O-1).

16. Navigational Aids and Facilities: All applicable navigational aids were operating. Mako 01 was operating on a published IFR Military Training Route which had been properly scheduled and for which he received Air Traffic Control (ATC) clearance (Tabs Y-1 through Y-4). IFR Military Training Routes are developed mutually by the Department of Defense and the FAA to provide for military operational and training requirements that can not be met under the terms of Federal Aviation Regulation (FAR) 91.117 (Aircraft Speed). When IR routes are active, Air Traffic Control (ATC) provides separation from non-participating Instrument Flight Rules (IFR) aircraft in controlled airspace. (Tab AA-3). Mr. Scruggs was operating off Federal Airways, not under IFR, and was not in contact with any Air Traffic Controlling agency. He did not utilize the flight service NOTAM system to make himself aware of active military training route (Tab V-6). The Airmans Information Manual states, in pertinent part, that "Nonparticipating aircraft are not prohibited from flying within an MTR, however extreme vigilance should be exercised when conducting flights through or near these routes." (AIM, Section 5, para 133) (Tab AA-4) Mr. Scruggs relied solely on his communication with Avon Operations on an unpublished, military use frequency to provide him with safe separation from military traffic. This was beyond the charter and capability of Avon Operations. Avon Operations is a military range coordination center and not an air traffic control (ATC) facility. It has no radar, no Air Traffic Controllers and no capability to provide flight following or traffic advisories (Tab BB-4). For these reasons, Avon Ops was unable to provide N148PD with a great deal of help when he declared his emergency (Tab N-1). The radio operator at Avon properly offered him the frequency to contact Miami Center, the radar controlling agency for that area (Tab N-1)

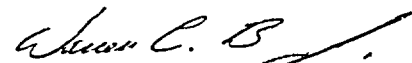
17. Weather and NOTAMS: On the date of the mishap, the weather was clear skies with inflight visibility better than 7 statute miles as observed by the Avon Park Range weather observer. Winds were calm. Altimeter setting was 30.11. Temperature was 82 degrees Fahrenheit (Tab W-1). The pilots of Mako flight reported a haze layer at about 1500 to 2000 feet above the ground; however, it apparently did not significantly reduce inflight visibility (Tabs V-1 through V-4).

Mr. Scrugg's would not provide his testimony to the investigating officer. Based upon telephone conversations with his attorney, (Miss Cecile S. Hatfield, Brumer, Cohen, Logan, Kandell & Kaufman, Museum Tower Bldg, Suite 2600, 150 W. Flagler St., Miami, FL 33130, (305) 374-5239) Mr. Scruggs determined that it was necessary to fly at an altitude of 1400 feet in order to see the ground for navigation purposes (Tab BB-2). However and notwithstanding, NOTAMS that Military Training Routes were active on 7 July were carried by the Flight Service Station (Tab W-4).

18. Directives and Publications: The following directives and publications applied to operation of the mission:

- (1). Air Force Regulation 60-16, General Flight Rules.
- (2). Major Command Manual 51-50, Tactical Aircrew Training.
- (3). Air Force Reserve Manual 51-50, Aircrew Training - Fighter.
- (4). Air Force Manual 51-12 Vols I and II, Weather for Aircrews.
- (5). Federal Aviation Administration FAR Part 91, General Operating and Flight Rules.
- (6). Federal Aviation Administration FAR Part 61, Certification: Pilot and Flight Instructors
- (7). Airman's Information Manual (AIM)
- (8). Department of Defense (DOD) Flight Information Planning (FLIP), General Planning and Area Planning 1 (AP 1)

No known or suspected deviations from directives or publications were noted with the exception of the civilian pilot's lack of a current FAA Medical Certificate.



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AFR 110-14 Aircraft Accident Investigation Officer

## GLOSSARY

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

ACC	- Air Combat Command
AF	- Air Force
AFR	- Air Force Regulation
AFRES	- Air Force Reserves
AFTO	- Air Force Technical Order
AGL	- Above Ground Level
AIM	- Airman's Information Manual: An FAA publication for civilian and military pilots.
APC	- Armored Personnel Carrier: a scored tactical target at Avon Park Range.
ATC	- Air Traffic Control
Avon Park	- A military range complex within R2901
BSA	- Basic Surface Attack
CAPS	- Critical Action Procedures
CC	- Commander
Charlie Range	- Call Sign of the C Range Control Officer
CUT	- Coordinated Universal Time
DOD	- Department of Defense
DT	- Dive Toss: a computed weapons delivery
EDT	- Eastern Daylight Savings Time
FAA	- Federal Aviation Agency
FCIF	- Flight Crew Information File



FLIP - Flight Information Publication: A DOD publication for military pilots.  
 FS - Fighter Squadron  
 FW - Fighter Wing  
 G - G force: the force of gravity  
 HADB - High Altitude Dive Bomb: a weapons event  
 HAS - High Angle Strafe: a weapons delivery event  
 Heads down - To momentarily glance inside the cockpit  
 HQ - Headquarters  
 HUD - Head Up Display  
 IFR - Instrument Flight Rules  
 IP - Instructor Pilot  
 IR - Military Training Route flown IFR  
 JA - Judge Advocate  
 L.A. - Los Angeles  
 LALD - Low Angle Low Drag: a weapons event  
 LRDT - Long Range Dive Toss: a weapons event  
 Mako - Call Sign of F-16A flight from the 934d FS; also, nickname for the 93rd FS  
 MFR - Memo for the Record  
 MSL - Mean Sea Level: a standard from which altitudes can be compared.  
 MTR - Military Training Route  
 N - Registration Number of U.S. civil aircraft  
 N148DP - Call Sign of Mishap aircraft  
 NM - Nautical Mile

NOTAMS	- Notices to Airman: A published notice containing information on the establishment, condition, or change in an aeronautical facility, service, or procedure that may be a hazard to flight.
NTSB	- National Transportation Safety Board
QA	- Quality Assurance
R-2901	- A military-use Restricted Area airspace in central Florida
RTB	- Return to Base
RTU	- Replacement Training Unit
SA2	- A tactical target at Avon Park which simulates a surface to air missile site.
SM	- Statute Mile
SN	- Serial Number
TCTO	- Time Compliance Technical Order
TO	- Technical Order: a manual or document
TOSS	- Target Optical Scoring System
UHF	- Ultra High Frequency
USAFR	- United States Air Force Reserve
UTA	- Unit Training Assembly
VFR	- Visual Flight Rules
VHF	- Very High Frequency
VMC	- Visual Meteorological Conditions
VR	- Military Training Route flown VFR
VTR	- Video Tape Recorder