Aviation Investigation Final Report

Location:	NAPLES, Florida	**Accident Number:**	MIA97FA217
Date & Time:	July 25, 1997, 18:13 Local	**Registration:**	N28246
Aircraft:	Gulfstream American AA-5B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The aircraft had a history of fuel caps leaking water into the fuel tanks, and repairs had been attempted. About 3 to 4 inches of rain had fallen since the aircraft was refueled about two days before the accident. Water was found in the fuel tanks during the preflight inspection. After takeoff the engine lost power, and the pilots decided to return to the airport. The second pilot stated the pilot-in-command was flying the aircraft, and after reversing course, the stall horn activated. Subsequently, the aircraft crashed on a road after clearing a building, a 25 foot sign, and a 25 foot palm tree. Postcrash examination showed the engine fuel system contained water contamination; there was no evidence of engine mechanical failure or malfunction. The left and right fuel tank caps were found to leak water into the tanks during postcrash tests. The pilot-in-command's logbook showed he last flew 11 months before the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: leaking fuel cap(s), due to inadequate maintenance/repair, which resulted in water contamination of the fuel; inadequate preflight by the flight crew; and improper planning/decision by the flight crew. Factors relating to the accident were: high obstructions in the emergency landing area, and the pilot-in-command's lack of recent flying experience.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) FUEL SYSTEM,CAP - LEAK
2. (C) MAINTENANCE,REPLACEMENT - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
3. (C) FLUID,FUEL - CONTAMINATION,WATER
4. (C) AIRCRAFT PREFLIGHT - INADEQUATE - FLIGHTCREW

Occurrence #2: FORCED LANDING
Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
5. (C) PLANNING/DECISION - IMPROPER - FLIGHTCREW
6. (F) TERRAIN CONDITION - HIGH OBSTRUCTION(S)
7. MANEUVER TO AVOID OBSTRUCTIONS - PERFORMED - PILOT IN COMMAND
8. AIRSPEED - NOT MAINTAINED
9. STALL - INADVERTENT
10. (F) LACK OF RECENT EXPERIENCE - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
11. TERRAIN CONDITION - ROADWAY/HIGHWAY

Factual Information

HISTORY OF FLIGHT

On July 25, 1997, about 1813 eastern daylight time, a Gulfstream American AA-5B, N28246, registered to Mile High Productions, Inc., crashed while returning to land following loss of engine power at Naples Municipal Airport, Naples, Florida, while on a Title 14 CFR Part 91 aerial advertising flight. Visual meteorological conditions prevailed at the time and no flight plan was filed. The aircraft received substantial damage and the commercial-rated pilot received fatal injuries. The private-rated second pilot received serious injuries. The flight was originating at the time of the accident.

The second pilot stated that the flight was an aerial advertising training flight. They were to fly in formation with four other aircraft and use the smoke systems on the five aircraft for aerial writing. He was on the flight to instruct the pilot in the use of the smoke system and aerial advertising procedures. He assisted the pilot with the preflight inspection and when they drained the sumps for the left fuel tank they observed water in the sample. The aircraft had been topped off with fuel about 2 days before the accident and between the fueling and the day of the accident it had rained about 3 to 4 inches. After draining about 8 ounces of fuel they no longer observed water in the sample. They did not observe any water in the right fuel tank samples.

Taxi, engine runup prior to takeoff, and takeoff on runway 5 were normal. Shortly after takeoff, when climbing through 350-400 feet, there was a sudden partial loss of engine power. He and the pilot agreed to try and make it back to the runway. They reversed course and aligned with runway 23. The stall indicator horn activated and the pilot traded altitude for airspeed. The stall horn stopped activating. The engine was now running at 1200-1500 rpm and they started losing altitude quickly. He does not remember anything after this.

The Air Traffic Controller at the Naples Municipal Airport Control Tower stated a flight of five Grumman American aircraft departed on runway 5 in formation. One of the pilots reported losing power and had to return for landing. He cleared the flight to land on any runway. He observed the aircraft in a turn at about 200 feet agl, trying to return to runway 23. The pilot then reported we are going in. The aircraft descended from sight about 1/2 mile from the approach end of runway 23.

A witness reported hearing an aircraft with the engine stalling out. She then observed N28246 flying in a westerly direction. As the aircraft flew westerly the engine would run for about 2 seconds and then stall out for about 2 seconds. It continued running in this manner. The aircraft was losing altitude and was just above the buildings in the area. During the short time the engine would run, the aircraft would gain a little altitude. The aircraft was banking "left

to right wildly". The left wing of the airplane then dropped down to about a 45 degree angle to the ground. The nosed then dropped down and the aircraft descended nose first toward the ground. She then lost sight of the aircraft behind a building.

PERSONNEL INFORMATION

The pilot held an FAA commercial pilot certificate with airplane single engine and instrument airplane ratings. He held a FAA second class medical certificate issued on June 11, 1997, with no limitations. The pilot's logbook showed the pilot received a biennial flight review on June 22, 1996, as required by Title 14 CFR Part 61.56. The pilot's last flight logged was on August 31, 1996. Title 14 CFR Part 61.57 requires that within the preceding 90 calendar days a person must have three takeoffs and three landings as the sole manipulator of the controls in an aircraft prior to acting as the pilot in command of an aircraft carrying passengers. The second pilot stated that this was the first flight for this pilot with the aerial advertising company.

Additional information on the pilot-in-command and information on the second pilot is contained in First Pilot Information, Supplement E, and in attachments to this report.

AIRCRAFT INFORMATION

The second pilot stated he performed the maintenance on the aircraft. He stated that he had observed water contamination in the left fuel tank in May 1997 and suspected the fuel cap o-rings were defective. While replacing the o-rings, the shaft on the cap broke. He then obtained a used cap, changed the o-rings, and installed the cap on the left tank of N28246. After changing the o-rings on the left cap he performed a leak check and observed no leaks.

Additional aircraft information is contained in Aircraft Information and in attachments to this report.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. Additional meteorological information is contained in Weather Information.

COMMUNICATIONS

The NTSB requested a transcript and re-recorder of communications between the pilots of N28246 and Air Traffic Controllers at the Naples Non-Federal Control Tower. Review of the recording tapes by Air Traffic Controllers showed that the recorder had malfunctioned on July 25, 1997, and the transcripts or re-recordings could not be produced. See attached letter from the Naples Control Tower Manager.

WRECKAGE AND IMPACT INFORMATION

The aircraft crashed on Airport Road at the intersection of South Horseshoe Drive, Naples, Florida. Examination of the crash site showed the aircraft cleared a building, a 25 foot advertising sign, and a 25 foot palm tree on the east side of Airport Road, while on a southwesterly heading. The aircraft's descent angle was in excess of 25 degrees. The aircraft touched down hard on the northbound lanes of Airport Road. During touchdown the landing gear collapsed and separated from the aircraft. The aircraft skidded about 80 feet after touchdown and came to rest against a sign on the west side of Airport Road.

All components of the aircraft necessary to sustain flight were located on or around the main wreckage of the aircraft. Continuity of all flight and engine control cables was established. Testing of the stall warning system showed it operated normally.

Examination of the aircraft and engine fuel system showed both fuel tanks had been ruptured and most fuel had leaked from the tanks. The left and right fuel tank sumps had been crushed and did not contain any fuel. The fuel selector valve was found positioned on the left fuel tank. The fuel valve operated normally during testing. All fuel lines were found unobstructed. The fuel line into the electric boost pump had separated during the accident. A mixture of fuel, water, and rust debris was found in the inlet side of the electric pump and the interior of the pump had corrosion and rust on the surfaces. The electric fuel boost pump was operated and it expelled a mixture of water, fuel and debris from the outlet side of the pump.

The fuel line between the electric pump and engine-driven fuel pump was still attached to each pump and was found to contain a mixture of fuel and water. The engine driven pump was found to contain a mixture of fuel and water, and the interior surfaces of the pump had corrosion and rust on them.

Examination of the carburetor showed all fuel had leaked from the bowl after the accident. The fuel inlet screen to the carburetor had rust and corrosion on it. All passages within the carburetor were unobstructed and the float and shutoff needle valve operated normally.

Examination of the left and right fuel tank caps showed that the large o-ring on the outer diameter of the caps had rolled over in the groove and some rust was present on the o-ring. Leak testing of each cap on the tank after the accident showed that each cap leaked water into the tank opening when water was poured over the outside of the closed cap.

All fuel and water specimens obtained from the fuel system did not foam when shaken in a bottle. A sample of fire fighting foam which was sprayed on the aircraft by the fire department after the accident, foamed when shaken in a bottle.

Examination of the engine assembly showed the engine rotated normally and continuity of the crankshaft, camshaft, valve train, and accessory drives was established. Each cylinder produced compression when the engine was rotated. Each magneto was found timed to 25

degrees before top dead center and each magneto fired normally when rotated by hand.

The propeller was still attached to the engine after the accident. Each blade had twisting and chordwise scratching damage consistent with rotation during ground impact. Two cut marks from the propeller were identified on the road. The cut marks were 25 inches apart. Calculations showed that at the stall speed of the aircraft, 56 knots, the propeller would have to rotate at 1,349 rpm to make cut marks 25 inches apart. The second pilot stated the engine was operating between 1,200 and 1,500 rpm just before the accident.

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot was performed by Manfred C. Borges, Jr., M.D., Associate Medical Examiner, Fort Myers, Florida. The cause of death was attributed to multiple blunt force injuries. No findings which could be considered causal to the accident were reported. Postmortem toxicology tests on specimens obtained from the pilot were performed by Smithkline Beecham Clinical Laboratories, Leesburg, Florida and the FAA Toxicology Laboratory, Oklahoma City, Oklahoma. The tests were negative for ethanol alcohol, carbon monoxide, basic, acidic, and neutral drugs. The tests were positive for pentobarbital and phenytoin. The pilot received medical treatment for injuries sustained in the accident and death was reported as occurring in the hospital on July 26, 1997, about 0541.

The safety pilot received serious injuries as a result of the accident. Additional medical and pathological information is contained in Supplement K and in the toxicology reports.

ADDITIONAL INFORMATION

The aircraft wreckage was released by NTSB on July 26, 1997, to Gerard A. Preiser, Mile High Productions, Naples, Florida.

Pilot Information

Certificate:	Commercial	**Age:**	52,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	June 11, 1997
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	861 hours (Total, all aircraft), 713 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Gulfstream American	**Registration:**	N28246
Model/Series:	AA-5B AA-5B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility; Restricted (Special)	**Serial Number:**	AA5B-0965
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 12, 1997 100 hour	**Certified Max Gross Wt.:**	2400 lbs
Time Since Last Inspection:	78 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1141 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-360-A4K
Registered Owner:	MILE HIGH PRODUCTIONS, INC.	**Rated Power:**	180 Horsepower
Operator:	MILE HIGH ADVERTISING	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	APF ,9 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	18:55 Local	**Direction from Accident Site:**	230°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Broken / 15000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	28°C / 26°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(APF)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	18:11 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	NAPLES MUNICIPAL APF	**Runway Surface Type:**	
Airport Elevation:	9 ft msl	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	26.150045,-81.740539(est)

Administrative Information

Investigator In Charge (IIC):	Kennedy, Jeffrey
Additional Participating Persons:	RAND FRANKLIN; MIAMI , FL EDWARD ROGALSKI; WILLIAMSPORT , PA
Original Publish Date:	July 31, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=38149

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