



National Transportation Safety Board Aviation Accident Final Report

Location:	Pavo, GA	Accident Number:	ERA09FA487
Date & Time:	08/27/2009, 1117 EDT	Registration:	N654GT
Aircraft:	SOCATA TB20	Aircraft Damage:	Substantial
Defining Event:	VFR encounter with IMC	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot left the departure airport on a visual flight rules flight. He did not file a flight plan. While over the accident site, the pilot entered into instrument meteorological conditions, with multiple layers of clouds, rain, and mist. Weather reporting locations near the accident site reported instrument flight rules conditions with thunderstorms and rain, ceiling overcast at 500 to 600 feet above ground level. The National Weather Service area forecast expected widely scattered to numerous rain showers and thunderstorms over the region at the time of the accident. Examination of the crash site indicated that the left wing separated from the airplane in an upward direction while in flight. Fractures in the wing spar were consistent with overstress separation. Examination of the aircraft and engine showed no evidence of precrash failure or malfunction prior to separation of the left wing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's continued visual flight into instrument meteorological conditions, with embedded intense thunderstorms, heavy rain, and severe to extreme turbulence, resulting in an in-flight separation of the left wing due to overstress.

Findings

Personnel issues	Decision making/judgment - Pilot (Cause) Incorrect action performance - Pilot (Cause)
Environmental issues	Thunderstorm - Contributed to outcome

Factual Information

HISTORY OF FLIGHT

On August 27, 2009, at 1117 eastern daylight time, a Socata TB-20, N654GT, registered to RFM Technical Consulting LLC, encountered adverse weather and broke up in flight near Pavo, Georgia. The certificated private pilot and passenger were killed, and the airplane was destroyed. Instrument meteorological conditions prevailed and no flight plan was filed. The personal flight was operated under the provisions of Title 14, code of federal regulation (CFR) part 91. The flight originated at Montgomery Regional Airport (MGM), Montgomery, Alabama, at 1001 on the same day.

The airplane was reported missing by family members on the evening of August 27, 2009, and was found by local authorities on August 28, 2009, about 1400. There were no witnesses to the accident.

According to family members the pilot was enroute to the North Perry Airport (HWO) Hollywood, Florida. Review of the available recorded radar data from the Federal Aviation Administration (FAA) showed the airplane was on a southeast heading at an altitude of 3,400 feet mean sea level (msl). At 1111 the airplane was observed turning to a due east heading. At 1115 the airplane began a 180-degree turn to the west maintaining 3,400 feet msl, and at 1117, the airplane was lost from radar.

PERSONNEL INFORMATION

The pilot, age 62, held a private pilot certificate for airplane single-engine land, last updated on August 29, 2002, and a third-class airman medical certificate issued on January 10, 2008, with a limitation the he must have available glasses for near vision. The pilot logbook was not recovered for examination. On the pilot's most recent medical certificate he reported his total civilian flight hours as 600.

AIRCRAFT INFORMATION

The four-seat, low wing, tricycle retractable landing gear airplane, serial number (S/N) 2208, was manufactured in 2003. It was powered by a Lycoming IO-540 SER, 250 horse power engine and equipped with a Hartzell Model HC-C2YK-1BF/F8477-4, constant-speed propeller. A review of the logbook provided by Socata aircraft revealed that the most recent annual inspection was completed on September 25, 2008, at a tachometer time of 267.0 hours. The tachometer was observed at the accident site, and displayed a total time of 297.0 hours.

METEOROLOGICAL INFORMATION

There was no official weather reporting facilities in Pavo, Georgia. The closest weather reporting facility to the accident site was from Moultrie Municipal Airport (MGR), Moultrie, Georgia, located approximately 9 miles north of the accident site at an elevation of 294 feet. The airport had an Automated Weather Observation System (AWOS-3), and reported the following conditions:

MGR weather observation at 1040, automated, wind calm, visibility 7 miles in light rain, scattered clouds at 500 feet above ground level (agl), ceiling broken at 3,100 feet, overcast at 7,000 feet, temperature 25-degrees Celsius (C), dew point temperature 23 degrees C, altimeter setting 30.06 inches of Mercury (HG). Remarks: automated weather observation system.

MGR weather observation at 1100, automated, wind from 040 degrees, at 4 knots, visibility 7 miles, ceiling overcast at 500 feet agl, temperature 25-degrees C, dew point temperature 23 degrees C, altimeter setting 30.06 inches of Hg. Remarks: automated weather observation system, lightning distant southwest.

MGR weather observation at 1140, automated, wind from 050 degrees, at 4 knots, visibility 5 miles in moderate rain, ceiling overcast at 500 feet agl, temperature 26-degrees C, dew point temperature 24 degrees C, altimeter setting 30.07 inches of Hg. Remarks: automated weather observation system, lightning distant all quadrants.

MGR weather observation at 1200, automated, wind from 110 degrees, at 10 knots gusting to 18 knots, visibility 1 3/4 miles in heavy rain, ceiling broken at 500 feet agl, overcast at 1,900 feet, temperature 23-degrees C, dew point temperature 21 degrees C, altimeter setting 30.08 inches of Hg. Remarks: automated weather observation system, lightning distant northeast.

Observations and satellite imagery indicated that N654GT departed Montgomery Regional Airport, Alabama, in VFR conditions. The pilot encountered deteriorating conditions as he flew into Georgia with multiple layers of clouds, rain and mist, and entered into instrument meteorological conditions. The surrounding weather reporting locations to the accident site reported IFR conditions with thunderstorms and rain, ceiling overcast at 500 to 600 feet agl, and the National Weather Service area forecast expected widely scattered to numerous rain showers and thunderstorms over the region at the time of the accident.

WRECKAGE AND IMPACT INFORMATION

Examination of the wreckage on site found the airplane was scattered over 1,000 feet, on a 259 degree heading, with papers and light aluminum airframe skin hanging in area trees. The first major piece of debris observed was the left wing. The left wing was observed inverted with the landing gear pointing up and locked in the extended position. The wing had separated from the airframe at the wing root. There was an impact crater near the wing root and dirt was observed covering the broken wing spar. The wing remained intact from the wing root to the wing tip. However the wing spar was curved towards the leading edge just inboard of the wing fuel tank. Examination of the wing spar by the NTSB Materials Laboratory showed the wing spar failed in an upward direction and there was no evidence of pre-existing cracking in the spar. The fracture surface of the spar was consistent with overstress separation.

The aft cabin area just aft of the pilot and co-pilot seats was observed inverted nose down in a brush covered area. The cargo door was separated and observed in another location. The floor remained intact but the empennage had separated at its rivet point to the aft cabin area. A portion of the right cabin area remained partially attached to the cabin. The elevator and rudder control push-pull rods remained attached within the cabin but had separated from their attach point to the control surfaces. Both control rods exhibited moderate downward bending along their entire length. The empennage was separated from the aft cabin and shredded and torn into multiple pieces, many of which were recovered from the accident site.

The elevator was relatively undamaged, except where it separated from the empennage. The elevator skin and trim tabs were undamaged. The vertical stabilizer and rudder had separated and the vertical stabilizer was observed along the wreckage path bent to the left about mid

length and folder over onto itself. The rudder counter weight was not located. The rudder was observed along the wreckage path and had separated from the vertical stabilizer at its attachment points, other than the damaged attachment points the rudder was undamaged.

The cockpit was observed rolled into a ball. The engine was found separated but nearby. Observation of the cockpit instruments found that it was equipped with a Garmin 430, and Garmin 530 GPS Navigational units and a WX500 Storm-scope. The flap handle was in the up position and was confirmed via the flap jack screw. The landing gear handle was in the down position and the landing gear was down and locked. The fuel selector was observed selected to the left fuel tank. The turn and bank indicated showed a left wing down attitude.

Examination of the engine found it separated from the airframe with some engine mount hardware attached. The engine was found up-right with the propeller separated but nearby. The propeller had separated just aft of the crankshaft/propeller flange. Examination of the engine and accessories showed no evidence of precrash failure or malfunction.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on August 31, 2009, by the Division of Forensic Sciences, Georgia Bureau of Investigation, State of Georgia. The autopsy findings included, "Extensive blunt impact trauma of the head and torso and multiple blunt injuries." Due to the delay in locating the airplane, the autopsy was not conducted until 4 days after the accident. The autopsy report noted evidence of "early decomposition." Forensic toxicology was performed on specimens from the pilot by the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology report indicated that the carbon monoxide and cyanide tests were not performed. However, 59 (mg/dL, Mg/Hg) Ethanol was detected in the muscle, 6 (mg/dL, mg/hg) N-Butanol detected in muscle, and 2 (mg/dL, Mg/hg) N-Propanol detected in muscle.

History of Flight

Enroute-cruise	VFR encounter with IMC (Defining event) Windshear or thunderstorm
Maneuvering	Aircraft structural failure
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	Age:	62, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	01/10/2008
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	600 hours (Total, all aircraft), 297 hours (Total, this make and model), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	SOCATA	Registration:	N654GT
Model/Series:	TB20	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	2208
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	09/25/2008, Annual	Certified Max Gross Wt.:	3080 lbs
Time Since Last Inspection:	30 Hours	Engines:	1 Reciprocating
Airframe Total Time:	297 Hours	Engine Manufacturer:	LYCOMING
ELT:	C91 installed, not activated	Engine Model/Series:	IO-540 SER
Registered Owner:	On file	Rated Power:	250 hp
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	MGR, 294 ft msl	Observation Time:	1100 EDT
Distance from Accident Site:	9 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	338°	Conditions at Accident Site:	Instrument Conditions
Lowest Cloud Condition:		Temperature/Dew Point:	25° C / 23° C
Lowest Ceiling:	Overcast / 500 ft agl	Visibility	7 Miles
Wind Speed/Gusts, Direction:	4 knots, 40°	Visibility (RVR):	
Altimeter Setting:	30.06 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	Heavy - Showers - Rain; Heavy - Thunderstorms - Mist		
Departure Point:	Montgomery, AL (MGM)	Type of Flight Plan Filed:	None
Destination:	Hollywood, FL (HWO)	Type of Clearance:	None
Departure Time:	1001 EDT	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal		

Administrative Information

Investigator In Charge (IIC):	Ralph L Wilson	Adopted Date:	12/20/2010
Additional Participating Persons:	Michael Christensen; FAA/FSDO; Atlanta, GA Philippe Santoro; Socata North America; Pembroke Pines, FL		
Publish Date:	12/20/2010		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=74614		

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