

# **Aviation Investigation Final Report**

Location:	GAINESVILLE, Geo	rgia	Accident Number:	MIA97FA219
Date & Time:	July 25, 1997, 18:44 Local		Registration:	N8473P
Aircraft:	Piper	PA-32R-301T	Aircraft Damage:	Destroyed
Defining Event:			Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional			

# Analysis

Witnesses said they observed takeoffs & landings being performed. Pilot(s) of the accident airplane (N8473P), turned off runway 22 after landing & taxied back to the approach end to take off again. As N8473P was taking off, the pilot of an arriving airplane ask about N8473P's location. Pilot(s) of N8473P replied that they were on the takeoff roll. During initial climb after lift-off, they transmitted 'give us some room to turn this thing around.' N8473P was observed to climb to about 100 ft agl, bank sharply left, then roll to a wings level attitude. Witnesses then lost sight N8473P due to obstructions. Smoke was observed, & 911 was called to report the accident. Witnesses said the landing gear was retracted when N8473P began banking left. Investigation revealed N8473P first contacted the tops of two 25 feet-tall trees, then it collided with a walkway canopy. Fire destroyed most of the right wing, the cockpit & cabin, & slight fire damage was noted to the left wing. Fire damage & browning of grass were noted forward of the right wing. No chemical or fire damage was noted to plants forward & beneath the initial impact point with the left wing inboard fuel tank, & no hydraulic rupture to the left wing fuel tanks was noted. An exam of the engine, flight controls, & airframe revealed no evidence of preimpact malfunction or failure. The fuel selector components had impact damage, & the fuel selector was found positioned about 15 deg to the right of the 'left' fuel tank position.

### **Probable Cause and Findings**

The National Transportation Safety Board determines the probable cause(s) of this accident to be: loss of engine power for undetermined reason(s). Factors relating to the accident were: the lack of suitable terrain for a forced landing, and obstructions (trees and building) that were encountered during the emergency landing.

#### Findings

Occurrence #1: LOSS OF ENGINE POWER Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

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

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings

2. (F) TERRAIN CONDITION - NONE SUITABLE

3. (F) OBJECT - TREE(S)

4. (F) OBJECT - BUILDING(NONRESIDENTIAL)

### **Factual Information**

#### HISTORY OF FLIGHT

On July 25, 1997, about 1844 eastern daylight time, a Piper PA-32R-301T, N8473P, registered to a private individual, collided with a commercial building during a forced landing shortly after takeoff from the Lee Gilmer Memorial Airport, Gainesville, Georgia. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 CFR Part 91 instructional flight. The airplane was destroyed by impact and postcrash fire and the pilot and pilot-rated student were fatally injured. The flight originated about 1 minute earlier.

Witnesses on the airport reported that they observed takeoffs and landings being performed, then one of the witnesses observed the airplane turn off the runway after landing and taxi back to the approach end of the runway. During the takeoff roll, he heard the pilot of an arriving airplane ask where the accident airplane was located and both of the witnesses heard an occupant respond that the flight was on the takeoff roll. They both then heard one of the occupants state to the pilot of the arriving airplane, "give us some room to turn this thing around." The witnesses reported that the airplane climbed to about 100 feet above ground level during the upwind leg then sharply banked to the left. The airplane was then observed to roll to a wings level position and the witnesses lost sight due to obstructions. Black smoke was then observed and 911 was called to report the accident. Both of the witnesses reported that the landing gear was retracted when the airplane began banking to the left.

#### PERSONNEL INFORMATION

Information pertaining to the first pilot seated in the right front seat is contained on page 3 of the Factual Report-Aviation.

Information pertaining to the pilot-rated student seated in the left front seat is contained in Supplement E. Additionally, according to the attorney who represents his estate, he provided funds and the airplane was purchased 2 weeks before the accident by Belle Isle International Sales, Inc. The airplane was then flown from California to Georgia, with Mr. Belle Isle acting as pilot-in-command and Mr. Bennett receiving instruction. The attorney also stated that he was receiving instruction to be able to fly solo in a high performance airplane as defined by the federal aviation regulations.

#### AIRCRAFT INFORMATION

Information pertaining to the airplane is contained on page 2 of the Factual Report-Aviation. Additionally, 2 weeks before the accident, the airplane was flown by a certified flight instructor acting as pilot-in-command with Mr. Belle Isle manipulating the flight controls. The demonstration flight lasted 36 minutes and no discrepancies were noted by the CFI who is also an A & P mechanic. He stated that he had previously flown the airplane a total of 13.5 hours over the previous 11 months excluding the demonstration flight with no discrepancies noted. He also stated that the fuel quantity gauges were "right on." The airplane was inspected before purchase and according to the maintenance facility that performed the work, a compression check of each cylinder was performed after the airplane was flown. Following the compression test it was a standard procedure for the mechanic to operate the engine which would include a magneto check. If any discrepancies were noted the mechanic would advise the owner and if repair work was not accomplished, the work order would be annotated with the discrepancy. Review of the work order revealed no mention of a discrepancy with the magnetos. According to the airplane type certificate data sheet, the total unusable fuel capacity for both fuel tanks is 5 gallons.

Review of the maintenance records pertaining to the magneto revealed that it was repaired on November 1, 1995. According to the facility that performed the work, the points were replaced, the point gap and timing were set.

#### METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. Additional meteorological information is on page 4 of the Factual Report-Aviation.

#### COMMUNICATIONS

The UNICOM frequency was not recorded.

#### WRECKAGE AND IMPACT INFORMATION

The airplane crashed in an industrial park about .38 nautical mile and 199 degrees from the center of the departure airport. Examination of the crash site revealed that the airplane first collided with the tops of two 25-foot tall maple trees then flew 358 feet over a vacant parking lot on a flight path of 045 degrees. The propeller and engine collided about 10 feet above ground level with a horizontal steel member of a concrete canopy that covered a walkway to the entrance of a commercial building. The left and right wings collided with the vertical steel members of the canopy about 7 feet 3 inches and 5 feet 5 inches above ground level respectively which ruptured the outboard section of the inboard fuel tank and the inboard fuel tanks respectively. The vertical supports were determined to be spaced about 15 feet 3 inches apart. The fuselage was resting on the walkway ground with a section of the fallen concrete canopy resting on the fuselage and the separated left wing. A broken fuel line at the wing root of the separated left wing was noted and no chemical or fire damage was noted to plants on the ground forward and beneath the left wing impact point. Slight fire damage to the upper and lower skin panels inboard of the left fuel tank rupture point, at the wing root, and to the left flap was noted. No evidence of hydraulic rupture to the left wing inboard fuel tank was noted. The cockpit, cabin, right wing, and grass and trees forward of the right wing were extensively

fire damaged. The propeller which had separated from the engine was located about 73 feet behind the main wreckage and 75 feet to the right of the flight path with one of the propeller blades separated from the hub. The separated blade was located on the roof of the adjacent building about 210 feet forward from the main wreckage. The airplane was recovered for further examination.

Examination of the right wing which was partially attached to the airframe revealed that it was impact damaged about 5 feet outboard of the wing root and extensive fire damage was noted. The flaps, landing gear, and air conditioner condenser door were determined to be retracted. Examination of the rudder flight control system revealed control cable continuity from the control surface bellcrank to the aft portion of the cabin where overload failure was noted. Elevator and aileron flight control continuity was confirmed from each control surface bellcrank to the control column.

Examination of the fuel selector valve control assembly revealed that the fuel selector was found positioned about 15 degrees to the left of the aft fitting on the valve. The fuel selector valve by design is, when positioned about 30 degrees to the left and right of the aft fitting, providing fuel from the left and right fuel tanks respectively. The fuel selector was not in a detent; however, when moved to a tank position, a positive detent was felt. Residual fuel was found in the fuel selector. The fuel selector control handle in the cockpit is connected to a bellcrank located in the cabin by a torque tube and from there a control rod assembly is connected to the fuel selector valve. Examination of the torque tube revealed it was connected to the bellcrank but the tube was bowed to the left about 40 degrees. The control rod was determined to be bent up about 5 degrees.

Examination of the two propeller blades in the hub revealed that one of the blades exhibited a slight forward bend near the tip with no gouges noted to the leading edge. The other blade exhibited evidence of chordwise scratches on the leading edge from about the midspan to the tip with gouges to the leading edge of the blade. Examination of the separated blade revealed slight paint transfer from the horizontal beam, chordwise scratches, a slight forward bend at the tip, twisting of the leading edge towards the low pitch position.

Examination of the separated engine revealed that the governor was separated and the dual magneto was separated from the accessory case but still attached by the ignition leads. Crankshaft, camshaft, and valve train continuity was confirmed. No blockage of the induction or exhaust system was noted. The servo fuel injector was examined and the fuel diaphragm stem was not failed. Examination of the turbocharger revealed that three of the compressor blades were bent opposite the direction of rotation and impact damage was noted to the drive shaft. The magneto was removed for further testing which revealed several discrepancies. (See tests and research section).

#### MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examinations of the pilot-in-command seated in the right front seat and the

pilot-rated student in the left front seat were performed by Gerald T. Gowitt, M.D., of the Forensic Medicine Associates, Inc., Lawrenceville, Georgia. The cause of death for the right and left seat occupants was listed as generalized trauma and blunt head and neck trauma.

Toxicological testing of specimens of the pilot-in-command and the pilot-rated student was performed by the FAA Toxicology and Accident Research Laboratory. The results of analysis of the specimens of the pilot was negative for carbon monoxide, cyanide, volatiles, and tested drugs. Salicylate was detected in the urine. The results of analysis of specimens of the pilot-rated student was negative for carbon monoxide, cyanide, volatiles, and tested drugs.

#### FIRE

The Gainesville Fire Department received a 911 call at 1847, arrived at 1852, and extinguished the fire using approximately 500 gallons of water.

#### TESTS AND RESEARCH

The dual magneto was examined which revealed internal heat damage. The right magneto "E-Gap" was determined to be 8 degrees greater than specified and the point clearance was determined to be .009 inch less than the minimum specified. The left magneto "E-Gap" was determined to be 16 degrees greater than specified and the point gap was measured to be .012 inch less than the minimum specified. The magneto was placed on a test stand using a "slave" ignition harness and test cap to replace the impact or heat damaged harness and cap. Voltage output was noted from the left magneto coil at 1,000 rpm but no voltage was noted from the coil of the right magneto at the same rpm. Heat damage to both capacitors was noted and both were shorted to ground due to solder that had melted and resolidified. All material that was found to short both capacitors was removed and both were attached to each respective magneto. The magneto was then operated and both were found to produce spark at 500, 1,000, and 2,000 rpm with no malfunction noted. The cam follower height of both magnetos was determined to be within limits and both contact points were examined and found to be in good condition.

#### ADDITIONAL INFORMATION

The cost to repair the building and surrounding area totaled \$40,321.00.

The wreckage minus the retained dual magneto, two each segments of the elevator cables, and the recovered aircraft and engine logbooks was released to Mr. Howard Wayne Allen of Allen Aero Service, on July 28, 1997. The retained components were released to Mr. Rodger E. Davison, the attorney for the estate of the pilot-rated student, on August 21, 1997.

# **Pilot Information**

Certificate:	Airline transport; Commercial; Flight instructor	Age:	48,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	June 27, 1997
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	15000 hours (Total, all aircraft)		

# Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N8473P
Model/Series:	PA-32R-301T PA-32R-301	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	32R-8229015
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	January 5, 1997 100 hour	Certified Max Gross Wt.:	3600 lbs
Time Since Last Inspection:	53 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2885 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	TIO-540-S1AD
Registered Owner:	BELLE ISLE INT'L ACFT SALES	Rated Power:	300 Horsepower
Operator:		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
<b>Observation Facility, Elevation:</b>	GVL ,1275 ft msl	Distance from Accident Site:	
Observation Time:	18:53 Local	Direction from Accident Site:	19°
Lowest Cloud Condition:	Clear	Visibility	9 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	230°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	31°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(GVL)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	18:43 Local	Type of Airspace:	Class G

# **Airport Information**

Airport:	LEE GILMER MEMORIAL GVL	Runway Surface Type:	Asphalt
Airport Elevation:	1275 ft msl	Runway Surface Condition:	Dry
Runway Used:	22	IFR Approach:	
Runway Length/Width:	4999 ft / 100 ft	VFR Approach/Landing:	Forced landing

# Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	Unknown
Total Injuries:	2 Fatal	Latitude, Longitude:	34.290599,-83.82933(est)

#### **Administrative Information**

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	ANTHONY B BROWNE; COLLEGE PARK, GA
Original Publish Date:	June 26, 1998
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=38150

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available here.