



# National Transportation Safety Board Aviation Accident Final Report

---

<b>Location:</b>	CAMBRIDGE, MD	<b>Accident Number:</b>	BFO95FA033
<b>Date &amp; Time:</b>	03/15/1995, 0512 EST	<b>Registration:</b>	N166CP
<b>Aircraft:</b>	PIPER PA-46-310P	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

---

## Analysis

THE AIRPLANE COLLIDED WITH TREES SHORTLY AFTER TAKEOFF AND CAME TO REST IN A CHURCH YARD. THERE WERE NO WITNESSES TO THE CRASH; HOWEVER, SEVERAL LOCAL RESIDENTS HEARD THE AIRPLANE OVERFLY THEIR HOMES AT A LOW ALTITUDE. ONE RESIDENT STATED THAT HE HEARD THE AIRPLANE COLLIDE WITH THE TREES. ANOTHER RESIDENT STATED THAT HE HEARD THE ENGINE OPERATING AS THE AIRPLANE FLEW LOW OVERHEAD. BOTH RESIDENTS REPORTED THAT REDUCED VISIBILITY HAMPERED THEIR ABILITY TO FIND THE WRECKAGE. ONE RESIDENT ESTIMATED THAT THE VISIBILITY WAS ABOUT 50 TO 60 FEET. THE PRESCRIBED TAKEOFF MINIMUMS FOR THAT AIRPORT IS 300 FEET AND 1 MILE VISIBILITY. EXAMINATION OF THE AIRPLANE DID NOT DISCLOSE EVIDENCE OF MECHANICAL MALFUNCTION.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the commercial/instrument rated pilot's failure to obtain/maintain adequate altitude/clearance during the initial climb after takeoff. Related factors are the pilot's poor planning/decision making, and the fog.

## Findings

---

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (F) WEATHER CONDITION - FOG
2. (F) PLANNING/DECISION - POOR - PILOT IN COMMAND
3. OBJECT - TREE(S)
4. (C) ALTITUDE/CLEARANCE - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND

## Factual Information

### HISTORY OF THE FLIGHT

On March 15, 1995, at 0512 eastern standard time, N166CP, a Piper PA-46-310P, collided with trees shortly after takeoff from Cambridge-Dorchester Airport, Cambridge, Maryland. The certificated commercial pilot, the sole occupant, was fatally injured. The airplane was destroyed. Instrument meteorological conditions (IMC) prevailed, and an Instrument Flight Rules (IFR) flight plan was filed, but the pilot had not received an IFR clearance. The personal flight was operated under 14 CFR 91. The intended destination was Martin State Airport in Baltimore, Maryland.

According to the owner of the airplane, the purpose of the flight was to pick up a passenger in Baltimore, then continue to Charlotte, North Carolina. The owner stated that the aircraft was refueled the night before the accident, and the pilot intended to depart about 0500. Federal Aviation Administration (FAA) Air Traffic Control (ATC) records indicate the pilot obtained a full weather briefing and filed two IFR flight plans about one hour before his intended departure. About 0512, shortly after takeoff, the airplane impacted trees in a residential area and came to rest in a church yard.

There were no witnesses to the crash; however, several nearby residents heard the airplane overfly their homes. One of the residents stated that he was upstairs in his home when he heard the airplane ripping through the trees. He reported when he went outside there was a strong smell of fuel and he saw debris from the airplane in his yard. He stated: "There was a heavy blanket of fog at the time."

A second resident stated that he was upstairs in his home when he heard an airplane flying low over his house. He stated that the engine was operating, and shortly thereafter he heard what appeared to be the impact. He reported that he called the police and rushed to the site, but was unable to see the airplane initially due to the heavy fog. The resident estimated the visibility to be about 50 to 60 feet.

The published instrument takeoff minimums for Cambridge- Dorchester Airport for runway 34 is 300 feet and one mile visibility.

The accident occurred during the hours of dawn, at 38 degrees 34 minutes North and 76 degrees 5 minutes West.

### PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with single engine land and multiengine land ratings. He also held an instrument rating. According to FAA records, the pilot's total flight time listed by him on his last medical certificate dated April 12, 1994, was "over 9600 hours of flight time."

### AIRCRAFT INFORMATION

The 1984 year model Piper PA-46-310P airplane, serial number 46- 8408024 was equipped with a Continental TSIO-520-BE engine, serial number 273719R. According to the engine log book, the airplane had accumulated over 6089 hours of total flight time. The engine had accumulated over 130 hours of flight time since the last annual inspection, that was completed on November 23, 1994, and over 1028 hours of flight time since overhaul.

## METEOROLOGICAL CONDITIONS

The 0453 hour surface weather observation for Salisbury-Wicomico County Regional Airport about 27 miles southeast of the accident site was as follows:

Sky condition, 100 feet sky obscured; visibility, one eighth of a mile in fog; temperature, 40 degrees Fahrenheit (F); dew point, 40 degrees F; wind condition, calm; and altimeter, 30.22 inches Hg.

## WRECKAGE AND IMPACT INFORMATION

The airplane impacted trees and a house, and came to rest in a church yard. Examination of the accident site revealed that the wreckage path was oriented on an approximate magnetic heading of 130 degrees.

During the impact sequence the airplane impacted the church parking lot, and the propeller separated from the engine propeller mount flange. The propeller hub and blades were partially buried in the ground at the edge of the parking lot. The main fuselage came to rest on an approximate magnetic heading of 070 degrees, near the west wall of the church.

The main fuselage remained intact. The right aileron separated during the initial impact sequence and was located in the trees. Both wings, the engine, the right horizontal stabilizer with outboard section of right elevator separated during the impact sequence. Flight control continuity was established to the rudder and elevator.

The landing gear lever was found selected to the down position, and all three landing gears were down and locked.

The engine, and all the engine accessories separated during the impact sequence. A preliminary examination was completed at the accident site. The examination included examining the engine- driven fuel pump and coupling. The pump was functional and there was evidence of fuel in the pump when it was rotated. Both magnetos produced spark when rotated by hand. Both vacuum pumps and the gyro for the Horizontal Situation Indicator (HSI) were disassembled and sent to the NTSB lab in Washington, DC, for examination. The examination did not disclose evidence of rotational damage. Details of the vacuum pumps and Navigational Gyros examination is attached to this report.

The engine was then transported to Dawn Aeronautics, New Castle, Delaware, for further examination. The examination included a teardown under the supervision of the NTSB. The top spark plugs were removed and appeared grayish with the drive coupling intact.

The crankshaft flange was rotated by hand. There was tree impact marks to the sump and #6 cylinder. The propeller governor was displaced during the impact sequence. The oil pump and gear housing were cracked. The crankcase was disassembled. The number 2 main bearing was in two pieces. The bearings were removed and sent to the NTSB lab in Washington, DC, for further examination.

The propeller assembly was sent to Hartzell Propeller, Inc., in Piqua, Ohio, for further examination. The examination revealed that the propeller was rotating at the time of impact, and the impact blade angle was consistent with a high power setting. There was no pre-impact discrepancies noted that would have precluded normal propeller operation. Details of the propeller examination are attached to this report.

## MEDICAL AND PATHOLOGICAL INFORMATION

A Medical Examination was done by Dr. Korell, Assistant Medical Examiner of Baltimore, Maryland, on March 16, 1995. Toxicological tests did not detect alcohol, drugs, or carbon monoxide.

## TESTS AND RESEARCH

The number 2 main bearing was examined at the NTSB Lab with a scanning electron microscope after it was ultrasonic cleaned with a detergent followed by rinsing in acetone. The examination revealed that the number 2 main bearing separated into three fragments. The separation was the result of fatigue cracks that originated on the concave side of the main bearing and a fatigue crack that originated on the back (convex) side of the main bearing.

The main bearings and crankshaft main journal surfaces when examined exhibited no heat damage. The correct part number bearings were found installed in the specified main journal locations of the engine. The measured diameter of the main journals were above the specified wear limits for the corresponding main bearings.

## ADDITIONAL INFORMATION

According to the Instrument Approach Procedure Charts, FAR 91.175 prescribes takeoff rules and establishes standard instrument takeoff minimums and departure procedures for certain operators as follow: (1) Aircraft having two engines or less - one statute mile.

Wreckage Release: The aircraft wreckage was released to the owner's insurance representative, John W. Cooley of J.W. Cooley & Associates, on March 15, 1995.

## Pilot Information

<b>Certificate:</b>	Flight Instructor; Commercial	<b>Age:</b>	65, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	04/12/1994
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	9600 hours (Total, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	PIPER	Registration:	N166CP
Model/Series:	PA-46-310P PA-46-310P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	46-8408024
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	11/23/1994, Annual	Certified Max Gross Wt.:	4118 lbs
Time Since Last Inspection:	125 Hours	Engines:	1 Reciprocating
Airframe Total Time:	6089 Hours	Engine Manufacturer:	CONTINENTAL
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	TSIO-520-BE
Registered Owner:	CHARLES POWELL	Rated Power:	310 hp
Operator:	CHARLES POWELL	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Dawn
Observation Facility, Elevation:	SBY, 52 ft msl	Distance from Accident Site:	27 Nautical Miles
Observation Time:	0515 EST	Direction from Accident Site:	304°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	0.12 Miles
Lowest Ceiling:	Obscured / 50 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	4° C / 4° C
Precipitation and Obscuration:			
Departure Point:	(CGE)	Type of Flight Plan Filed:	IFR
Destination:	MARTIN STATE, MD (MTN)	Type of Clearance:	None
Departure Time:	0505 EST	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	

## Administrative Information

**Investigator In Charge (IIC):** BEVERLEY DRAKE-JOHNSON, **Report Date:** 11/30/1995

**Additional Participating Persons:** LEO KUNEMAN; BALTIMORE, MD  
GEORGE HOLLINGSWORTH; MOBILE, AL  
ROGER STALLKAMP; DAYTON, OH

**Publish Date:**

**Investigation Docket:** NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at [pubinq@ntsb.gov](mailto:pubinq@ntsb.gov), or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).