



Aviation Investigation Final Report

Location:	Hilltown Township, Pennsylvania	Accident Number:	ERA22FA137
Date & Time:	February 24, 2022, 16:56 Local	Registration:	N6129V
Aircraft:	Beech 35	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and the pilot receiving instruction were conducting a flight in an airplane that the pilot receiving instruction owned, and the purpose of the accident flight was to prepare him for the commercial pilot practical examination. About 30 minutes after takeoff, the airplane was maneuvering at an altitude of about 1,600 ft above ground level. The airplane then entered a left spin and descended toward the ground, impacting a residential street.

A witness stated that he heard a single-engine airplane overhead and thought the airplane's loud engine sound did not match its slow airspeed, which meant to him that the airplane was most likely in a steep climb to practice a stall. The witness looked up again and saw the airplane diving almost straight down and twisting toward the ground.

Examination of the wreckage revealed no preimpact mechanical malfunctions. Review of automatic dependent surveillance-broadcast (ADS-B) data revealed that the airplane's maneuvers during the final portion of flight were conducted below its flaps-up, idle power stall speed and were twice briefly below the flaps-down stall speed. During the final 30 seconds of flight, the airplane rolled rapidly to the left when engine noise was reduced. The airplane's rapid left roll and loss of altitude were consistent with an aerodynamic stall. Thus, the pilot who was flying (which could not be determined based on the available evidence) allowed the airplane's critical angle of attack to be exceeded, resulting in a loss of airplane control.

Toxicological testing detected ethanol and metoprolol in the flight instructor's specimens. The most likely source of the ethanol was postmortem production; therefore, the identified ethanol did not contribute to the circumstances of the accident. Although direct effects from the flight instructor's use of metoprolol likely did not contribute to the events, the available evidence precluded a determination of whether effects from the flight instructor's recent heart attack and underlying heart disease contributed to the circumstances of the accident. In addition, if

the flight instructor had experienced a medical event during the flight, should have been reasonable able to control the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilots' exceedance of the airplane's critical angle of attack while practicing maneuvers during an instructional flight, which resulted in an aerodynamic stall and a loss of airplane control.

Findings

Personnel issues	Aircraft control - Flight crew
Aircraft	Angle of attack - Capability exceeded

Factual Information

History of Flight

Maneuvering	Loss of control in flight (Defining event)
Maneuvering	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On February 24, 2022, about 1656 eastern standard time, a Beech 35-C33, N6129V, was destroyed when it was involved in an accident near Hilltown Township, Pennsylvania. The flight instructor and the pilot receiving instruction were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The pilot receiving instruction owned the airplane and had successfully completed the commercial pilot written examination. The purpose of the accident flight was to prepare him for the commercial pilot practical examination. Review of Automatic Dependent Surveillance-Broadcast (ADS-B) data revealed that the airplane departed Doylestown Airport (DYL), Doylestown, Pennsylvania, about 1626. The data also showed that the airplane, while maneuvering at an altitude of about 2,000 ft mean sea level (about 1,600 ft above ground level), the airplane began to descend.

A witness to the accident was a licensed private pilot who tended to look up at the sky as small airplanes flew over. When the witness was standing in his neighbor's driveway, he heard a single-engine airplane overhead and thought the airplane's engine was loud and the airspeed was slow, which indicated to him that the airplane was most likely in a steep climb to practice a stall. By the time that he looked up at the sky again, he saw the airplane "diving, almost straight down" and "twisting toward the ground." The airplane was out of the witness' view after it descended behind a tree line. The witness then saw "a black ball of smoke."

The airplane impacted a residential street. During the impact, a propeller blade separated and landed in a residence. The wreckage came to rest upright, oriented about 125° magnetic and no debris path was observed. A postimpact fire consumed most of the wreckage.

Pilot Information

Certificate:	Private	Age:	55, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	April 3, 2020
Occupational Pilot:	No	Last Flight Review or Equivalent:	April 13, 2019
Flight Time:	(Estimated) 733 hours (Total, all aircraft), 385 hours (Total, this make and model)		

Flight instructor Information

Certificate:	Airline transport; Commercial; Flight instructor; Private	Age:	74, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Glider	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 3 With waivers/limitations	Last FAA Medical Exam:	October 5, 2021
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 11500 hours (Total, all aircraft)		

The pilot's logbook was not recovered. On an application for his commercial pilot certificate, dated February 15, 2022, he reported a total flight experience of 733 hours. During a previous insurance renewal quote for the accident airplane, he reported 385 hours of flight experience in the make and model airplane.

Review of the flight instructor's logbook revealed that he had a total flight experience of approximately 11,500 hours; of which, 8,000 hours were providing flight instruction.

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N6129V
Model/Series:	35 C33	Aircraft Category:	Airplane
Year of Manufacture:	1965	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	CD-858
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	March 5, 2021 Annual	Certified Max Gross Wt.:	3050 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	6782 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-520-BA
Registered Owner:	On file	Rated Power:	285 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KDYL, 393 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	16:54 Local	Direction from Accident Site:	100°
Lowest Cloud Condition:		Visibility:	10 miles
Lowest Ceiling:	Overcast / 3900 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.39 inches Hg	Temperature/Dew Point:	1°C / -9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Doylestown, PA (DYL)	Type of Flight Plan Filed:	None
Destination:	Doylestown, PA (DYL)	Type of Clearance:	None
Departure Time:	16:26 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	40.347778,-75.278889

The wreckage came to rest upright on a magnetic heading of about 125°, and no debris path was observed. The cockpit and cabin were mostly consumed by fire. Both wings separated from the airplane, but their respective flaps and ailerons remained attached. The empennage remained intact with the rudder and elevator still attached. The flaps and landing gear were retracted. Flight control continuity was confirmed from all flight control surfaces to the cockpit area. Measurement of the two elevator trim actuators corresponded to a 5° trim-tab-down (nose-up) position.

The engine came to rest upright separate from the airframe. The three propeller blades separated from the hub. One blade was consumed by fire about 12 inches outboard of the root. Another blade exhibited fire damage, s-bending, chordwise scratching, and leading-edge gouging. The other propeller blade exhibited s-bending, chordwise scratching, and leading-edge gouging.

Medical and Pathological Information

The Bucks County Coroner's Office, Warminster, Pennsylvania, performed autopsies for both the pilot receiving instruction and the flight instructor by. Their cause of death was multiple blunt force injuries. The flight instructor had a heart attack about 3 weeks before the accident. The autopsy examination of his heart was limited by the extent of his injuries.

Toxicology testing was performed on the pilot receiving instruction and flight instructor by the FAA Forensic Sciences Laboratory. The testing was negative for the pilot receiving instruction.

The testing for the flight instructor identified ethanol in liver tissue but not in his muscle tissue. The testing also identified metoprolol in both tissues. Ethanol is primarily a social drug found in beer, wine, and liquor and is a central nervous system depressant. Ethanol can also be produced by body tissues after death. Metoprolol is a beta-blocking drug used to treat high

blood pressure, control heart rate, and prevent recurrent heart attacks. The drug is generally considered not to be impairing.

Additional Information

Video Study

The National Transportation Safety Board (NTSB) conducted a video study to estimate the speed of the airplane's engine based on a video recorded by a camera installed on a residential building. The video was 65 seconds long and included sound. The study found that the engine was operating erratically near its expected operating speed—about 2,600 rpm. The last 11 seconds before ground impact included a 3-second period during which there was likely no combustion or the engine was idling. The airplane's rapid descent toward the ground started about the same time as this 3-second period.

Aircraft Performance Study

The NTSB also conducted a performance study for the accident flight. ADS-B data showed that the airplane's altitude varied between 1,400 and 4,000 ft mean sea level and that the calibrated airspeed varied between 50 and 150 knots. The study found that the airplane's maneuvers during the final portion of flight were below its flaps-up, idle power stall speed and were twice briefly below the flaps-down stall speed. The performance study also used images toward the end of the flight from the video recording to correlate the video data with the flightpath data. The study found that, during the final 30 seconds of flight, the airplane rolled left when engine noise was reduced.

Administrative Information

Investigator In Charge (IIC): Gretz, Robert

Additional Participating Persons: Michael Reichert; FAA; Allentown, PA
Earnest Hall; Textron; Wichita, KS

Original Publish Date: September 20, 2023

Last Revision Date:

Investigation Class: [Class 3](#)

Note:

Investigation Docket: <https://data.ntsb.gov/Docket?ProjectID=104702>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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](#).