



Aviation Investigation Final Report

Location:	ROODHOUSE, Illinois	Accident Number:	CHI94FA002
Date & Time:	October 2, 1993, 13:30 Local	Registration:	N2711Y
Aircraft:	BEECH 95	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

THE PURPOSE OF THE FLIGHT WAS MULTI-ENGINE FLIGHT TRAINING. THE TWIN-ENGINE AIRPLANE WAS OBSERVED MAKING POWER CHANGES DURING LEVEL FLIGHT SHORTLY BEFORE THE ACCIDENT AT AN ESTIMATED 1,500 TO 2,000 FEET ABOVE THE GROUND. WITNESSES REPORTED HEARING ENGINE SOUND CHANGES AND OBSERVED THE AIRPLANE ENTER A RIGHT-HAND SPIN. THE AIRPLANE COLLIDED WITH TREES AND TERRAIN SHORTLY AFTER ENTERING THE SPIN. AN ON-SCENE INVESTIGATION REVEALED POWERPLANT, POWERPLANT CONTROLS, AND FLIGHT CONTROL CONTINUITY. THE STUDENT PILOT HAD TO SIT ON A SEAT CUSHION IN ORDER TO SEE THROUGH THE WINDSHIELD ACCORDING TO THE AIRPLANE'S OWNER. THE OWNER STATED THE STUDENT'S FEET WERE NOT ABLE TO TOUCH THE RUDDER PEDALS COMPLETELY.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: was the inadequate supervision by the flight instructor which resulted in the inadvertent stall/spin by the student.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings

1. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND(CFI)
2. (C) STALL/SPIN - INADVERTENT - DUAL STUDENT

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

3. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On October 2, 1993, at 1330 central daylight time (CDT), a Beech BE-95, N2711Y, operated by the Midwest School of Aeronautics, Incorporated, of St. Louis, Missouri, and piloted by an airline transport rated pilot with a multi-engine student pilot who possessed a commercial pilot's certificate, was destroyed when it collided with trees and terrain. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 instructional flight had not filed a flight plan. Both pilots were fatally injured. The flight departed St. Charles, Missouri, at 1230 CDT.

Before departing on the training flight the pilot-in-command, or flight instructor (CFI), refueled N2711Y. He told the owner that he wanted all the fuel he could get, and that they would need it where they were going. The airplane owner said it was his understanding the CFI and multi-engine student (student) were going to the Alton, Illinois, area to carry out the training activities.

N2711Y's owner said the CFI had not flown one of his company's Beech BE-95s for about one year. He stated the CFI was not an employee of his.

During conversation with the owner it was revealed the CFI had difficulty starting the left engine after refueling the airplane.

The owner said a fuel primer line was loose and had to be tightened before the engine could be started.

Witnesses near the accident site reported hearing the airplane's engine sound change and observed it "...tail spinning... ." Two witnesses reported that N2711Y had performed a right-hand spin before colliding with the trees and terrain. At the approximate time of the accident, a witness reported seeing "...a twin-engine, private, prop airplane, flying due north at... 1,500 to 2,000 feet." This witness stated the airplane's engine sound caught his attention. He said the engine sound went from "...full throttle for approximately two to three seconds, then throttle down to about half for two to three seconds, then back to full throttle for another two to three seconds... ." The witness said the engine sound sequence repeated itself one more time. He said the airplane was flying in a level flight attitude.

PERSONNEL INFORMATION

The CFI's logbooks were not made available for review. According to a Federal Aviation Administration (FAA) airman's certificate/rating application dated October 25, 1992, the pilot had a total time of 5,900 hours. The FAA ISIS Airman Report showed the CFI had 7,000 hours

total time as of January 13, 1993.

The CFI had possessed airplane type ratings for the Douglas DC-3, Learjet, North American NA-265 Sabreliner, and the Swearingen SA-227. He had renewed his flight instructor certificate on May 7, 1993, after flying a Beech BE-58 with a designated pilot examiner.

During an interview with the designated pilot examiner it was revealed the CFI had performed a Vmc demonstration and a stall series during the instructor certificate renewal ride. The examiner said the CFI's performance was satisfactory. He said he had given the CFI a Beech BE-95 checkout approximately one month before the instructor's renewal ride. According to the examiner, the CFI was very familiar with the Beech BE-95, and that he considered his piloting ability "good."

The CFI had been employed for approximately four years as a simulator and ground instructor for turboprop and turbojet airplanes. The CFI's immediate manager stated he considered him to be one of his best instructors. He said the CFI did not ignore standardized training procedures.

The student had engaged the pilot-in-command for multi-engine airplane flight training according to the airplane owner. A review of the student's pilot logbook revealed she had not flown a multi-engine airplane before the accident flight. An interview with the chief pilot of the student's former flight school was conducted. During this interview the chief instructor stated the student had been below average in her basic piloting skills while at the flight school. He stated she was well above average academically during her attendance at the school.

WRECKAGE AND IMPACT INFORMATION

N2711Y's wreckage was confined to an area of trees' with heights varying between 20 and 50 feet above the ground. The airplane was positioned on the top of a terrain rise on an approximate 200 degree heading. Trees, about 50 feet in height, were next to N2711Y's left and right wing tips. A third tree was positioned about ten feet north of the airplane's rudder.

The right, outboard, wing section had separated from the wing structure next to the engine nacelle. It was resting next to that wing's main structure and previously identified tree. The left wing tip and approximately two feet of outboard wing section were positioned about twenty-five feet southeast of the airplane.

Windshield and cabin side window plexiglass was located in an arc measuring about 30 feet forward of the left engine to an area next to the inboard side of the right engine.

The left and right engines and propellers were found half buried into the ground. They were positioned at an approximate 45 degree angle to the ground. Both propellers had one blade that was bowed from the hub outward. The second blade of both propellers was bent aft about fifteen degrees beginning about 12 inches outward from the spinner. Examination of the

propellers revealed they were in a nonfeathered position.

N2711Y's forward fuselage had been crushed aft. Its lower section was crushed upward. The fuselage's nose covering had separated from its main structure and was laying on the left side of the forward fuselage. The forward fuselage, from the wing's leading edge forward, was bent downward about five degrees. N2711Y's cabin roof, from the windshield to the rear window's vertical post, was positioned upward at an approximate 85 degree angle to the fuselage centerline.

The front seats remained attached to their mounts. The left pilot's seat belt had separated from its mounts in the fuselage. It was found about five feet behind the left wing flap.

Examination of the landing gear actuator and gear box under the front seat revealed the landing gear was in an intermediate, extended, position. Throttle, mixture, and propeller control cables were attached to the correct cockpit levers. The appropriate component on the engines and propeller governors were attached to the same cable. Flight control cable continuity was established for the three primary flight controls. The elevator control horn 'UP' and 'DOWN' stops did not have any surface or shaft deformation.

The right engine's carburetor squirted a liquid that looked and smelled like 100 low lead aviation fuel into the throat when the throttle arm was moved. The left engine's carburetor had separated from its mount. Moist dirt was found in its accelerator pump well that smelled like 100 low lead aviation fuel. The dirt was ignited with a match and produced a yellow and orange colored flame and dense black smoke. A liquid matching that was found in the right engine's carburetor flowed out of the left engine's fuel pump inlet line.

Mechanical continuity was established for both engines. The oil screens on both engines were examined and found to contain pieces of hard, black, material randomly attached to their surfaces. A thumb compression check was conducted on both engines. Three of the left engines cylinders exhibited compression. The number three cylinder exhibited no compression. This cylinder's piston and rocker arms moved when the crankshaft was rotated. The right engine had compression on all four cylinders.

Both magnetos on the right engine produced spark when the propeller was rotated. The left engine's magnetos produced spark when rotated.

MEDICAL AND PATHOLOGICAL INFORMATION

The toxicology examination of the CFI and student was conducted by the Federal Aviation Administration's Civil Aeromedical Institutes toxicology laboratory located in Oklahoma City, Oklahoma. The CFI's toxicology report stated there was no carbon monoxide, cyanide, or ethanol detected in his blood. The examination report states there was 11.100 (ug/ml, ug/g) of salicylate found in the CFI's blood sample.

According to the toxicology report on the student, no carbon monoxide or cyanide was found in her blood samples. No ethanol or drugs were detected in her urine samples.

Autopsy reports submitted by the Greene County, Illinois, Coroner's Office. According to the report, the cause of death for both pilots was blunt traumatic injuries.

ADDITIONAL INFORMATION

According to the N2711Y's owner, the flight curriculum used by his flying school did not contain any flight maneuvers such as Vmc demonstrations in the first lesson. He said that it was difficult to get people to use the curriculum the way it was designed. He said maneuvers such as Vmc demonstrations, steep turns, and stalls were not done in the BE-95 with the outboard fuel tanks filled. The owner said this was not done because "All that weight in there would keep it spinning. It would be hard to stop the spinning." He stated that instructor's flying the BE-95 would not do banked turns of more than 30 degrees.

The owner said the student pilot discovered she needed a seat cushion to adequately see from the cockpit before departure. He said the student was raised up in the seat by using a seat cushion. According to the owner, her feet did not touch the rudder pedals completely. He was not certain how the CFI and student resolved the rudder pedal/foot contact situation.

According to FAA pilot certificate information, the CFI was five feet eight inches tall and weighed 250 pounds. The student weighed 140 pounds and was five feet, five inches tall.

N2711Y departed with full fuel according to the airplane's owner.

The owner said N2711Y was equipped with main wing tanks and two 31 gallon auxiliary wing tanks. The FAA Approved flight manual shows that full fuel is 112 gallons. This figure was confirmed by the owner. Based upon the approved flight manual and FAA pilot information, N2711Y's takeoff weight was 3,927 pounds.

The wreckage was released to Mr. James E. McClure of Mid-America Consulting, Incorporated, Peoria, Illinois, on October 4, 1993.

Pilot Information

Certificate:	Airline transport; Commercial	Age:	41, 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 Medical--no waivers/lim.	Last FAA Medical Exam:	January 13, 1993
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	7000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	Registration:	N2711Y
Model/Series:	95 95	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	TD36
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	September 8, 1993 100 hour	Certified Max Gross Wt.:	4000 lbs
Time Since Last Inspection:	63 Hrs	Engines:	2 Reciprocating
Airframe Total Time:	11651 Hrs	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-360-AIA
Registered Owner:	MIDWEST SCHOOL OF AERONAUTICS	Rated Power:	180 Horsepower
Operator:	MIDWEST SCHOOL OF AERONAUTICS	Operating Certificate(s) Held:	
Operator Does Business As:		Operator Designator Code:	YMWV

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	AL ,544 ft msl	Distance from Accident Site:	37 Nautical Miles
Observation Time:	12:50 Local	Direction from Accident Site:	165°
Lowest Cloud Condition:	Scattered / 12000 ft AGL	Visibility	20 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	17°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ST. CHARLES , MO (3SQ)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	12:30 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	39.480636,-90.370887(est)

Administrative Information

Investigator In Charge (IIC):	Gattolin, Frank
Additional Participating Persons:	GEORGE BALLARD; SPRINGFIELD , IL ROBERT D CONNAWAY; SPRINGFIELD , IL
Original Publish Date:	October 20, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=9359

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