Aviation Investigation Final Report

Location:	CYNTHIANA, Kentucky	**Accident Number:**	NYC00FA079
Date & Time:	February 14, 2000, 11:45 Local	**Registration:**	N875JC
Aircraft:	Beech 58	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot filed an IFR flight plan, and received a standard weather briefing. The pilot was advised of occasional moderate rime or mixed icing below 10,000 feet for his route of flight. During the briefing the pilot stated, 'we got boots, and will be all right....' Approximately 5 minutes before the accident, the pilot reported the airplane was 'picking up' rime ice at 10,000 feet, and he requested 12,000 feet. He also reported that the windshield and wings were covered with ice, and that ice accumulation at 10,000 feet was moderate and steady. When the airplane started to climb to 12,000 feet, calibrated airspeed (CAS) began to decay. When the airplane reached 11,200 feet, and prior to the airplane starting a rapid descent, CAS had dropped to 85 knots. Minimum airspeed for icing conditions was published as 130 knots. In addition, the stall speed for the airplane was approximately 82 knots. The airplane was approved for flight into known icing conditions. Examination of the airframe, engines and propellers revealed no preimpact failures or malfunctions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain airspeed during a climb, which resulted in a loss of aircraft control.

Findings

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

Findings
1. WEATHER CONDITION - ICING CONDITIONS
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On February 14, 2000, about 1145 Eastern Standard Time, a Beech 58, N875JC, was destroyed when it impacted terrain near Cynthiana, Kentucky. The certificated private pilot and the three passengers were fatally injured. Instrument meteorological conditions prevailed for the business flight that originated from the Tri-Cities Regional Airport (TRI), Bristol, Tennessee, about 1035, destined for the Eagle Creek Airpark (EYE), Indianapolis, Indiana. An instrument flight rules (IFR) flight plan was filed, and the flight was conducted under 14 CFR Part 91.

According to Federal Aviation Administration (FAA) records, the day before the accident, about 1510, the pilot telephoned the Nashville Automated Flight Service Station (AFSS) to file an IFR flight plan and to get a standard weather briefing. The briefer advised the pilot that there was a convective SIGMET for a line of thunderstorms 30 miles wide, with tops of 30,000 feet, along the intended route of flight. The briefer also advised the pilot of mountain obscuration, moderate rime icing and mixed icing from the freezing level to 24,000 feet, and moderate turbulence below 15,000 feet for the entire route of flight. After the briefer completed the briefing, the pilot stated he would think about it. About 1725, the pilot called the Nashville AFSS to get a weather update. After listening to the update the pilot decided not to attempt the flight.

On the day of the accident, about 0800, the pilot called the Nashville AFSS. He filed an IFR flight plan from Tri-Cities Regional direct to Eagle Creek, and requested a standard weather briefing. The briefer advised the pilot of two flight precautions. The first was for occasional moderate rime or mixed icing below 10,000 feet over Indiana and Western Kentucky. The other was for IFR conditions along the planned route of flight. Prior to giving the pilot any "pilot reports," the briefer stated "your going to get some ice for sure." He then advised the pilot of the following reports in the Cincinnati, Ohio, area:

A B-727 reported moderate rime ice from the surface to 3,500 feet. A MD-80, reported moderate icing from 4,000 to 6,000 feet during climbout. A "Hawker" reported that the tops of the clouds were 9,200 feet, and clear above. "Another" airplane reported the clouds tops as 11,700 feet, and clear above. Another MD-80 reported light chop and light rime icing at 10,000 feet. The briefer added there is a "lot of ice up there." The pilot responded, "we got boots, and will be all right. It will improve in the next couple of hours as well." The briefer added, "it looks to me like that stuff should blow out of there."

The airplane departed Tri-Cities Regional about 1035. The pilot did not report any problems with the flight until approximately 5 minutes before the accident, when he reported to air traffic control that he was "picking up" rime ice at 10,000 feet msl. He requested 12,000 feet, and 25

seconds later, was issued a clearance to that altitude. After clearing the airplane, the controller asked the pilot for the outside air temperature. The pilot responded "10 degrees." About 55 seconds after being cleared, the pilot advised the controller the icing was "pretty steady" and "pretty moderate" at 10,000 feet. He added that the windshield and wings of the airplane were covered with ice. He also stated he was "on-top" at approximately 10,500 feet msl. No other transmissions were received.

According to radar data, approximately 10 minutes before the accident, a target using the transponder code assigned to the accident airplane was heading northwest at 10,100 feet. About 5 minutes before the accident, the target started a climb. About 2 minutes before the accident, the target reached an altitude of 11,200 feet, then started a descent. Over the final 60 seconds of radar data, the target went from 11,200 feet to 3,800 feet. The airplane came to rest less than 800 feet horizontally from were the target started to descend.

The accident occurred during the hours of daylight. The wreckage was located 38 degrees, 17.804 minutes north latitude, 84 degrees, 26.250 minutes west longitude, and an elevation of 1,015 feet.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with a single engine land, multi-engine land, and instrument airplane rating. His last FAA third class medical was dated October 1, 1999, and had no restrictions.

According to the pilot's multi-engine-rating application dated December 17, 1999, he had 511.0 hours of total flight experience. In addition, he had 58.0 hours of instrument experience, 12.8 hours of simulator experience, and 24 hours in the accident airplane make and model. The pilot's logbook was not recovered, and presumed destroyed in the post-crash fire.

According to the flight instructor that prepared the pilot for his multi-engine-airplane rating, the pilot started taking instruction for the rating on September 22, 1999, and completed it on December 17, 1999. During this period, the instructor flew approximately 23 hours with the pilot in the accident airplane. In addition, the instructor flew the accident airplane after the annual inspection was complete in January 2000, and "found the aircraft to be in "excellent mechanical condition."

The day before the accident, the instructor talked to the pilot via telephone, and the pilot commented that the "...aircraft was performing flawlessly." During the conversation, the instructor cautioned the pilot about the prevailing weather conditions. The instructor then offered to meet the pilot in Bristol, Tennessee, to accompany him home. The pilot declined the offer, and said he would wait for the weather to improve before attempting the flight home.

AIRCRAFT INFORMATION

According to maintenance records, an annual inspection was completed on January 3, 2000. During the annual, the pitot heat, stall warning system, propeller deicers, and deicing boots were checked and found operational. In addition, on December 20, 1999, the pitot static system, and the static port heaters were checked and found operational.

METEOROLOGICAL INFORMATION

The Blue Grass Airport, Lexington, Kentucky, at 1103, reported wind 300 degrees at 8 knots; visibility 1 mile in mist; ceiling 300 feet overcast; temperature 35 degrees Fahrenheit; dew point 35 degrees Fahrenheit; and an altimeter setting 29.87 inches of mercury. At 1154, Lexington reported wind 300 degrees at 8 knots; visibility 1 mile in light rain and mist; ceiling 300 feet overcast; temperature 35 degrees Fahrenheit; dew point 35 degrees Fahrenheit; and an altimeter setting 29.88 inches of mercury.

At 1145, while climbing out, the crew of a BA-146 reported light to moderate clear ice approximately 10 miles to the west of the accident site. At 1146, the crew of another BA-146 located about 10 miles to the south of the accident site, reported light to moderate clear ice from 8,000 to 10,000 feet msl. In addition, the second crew reported the cloud tops as 10,500 feet msl.

WRECKAGE AND IMPACT INFORMATION

The wreckage was confined to the dimensions of the airplane. The airplane came to rest upright on a heading of 180 degrees magnetic. To the left, right, and rear of the airplane was a wooded area. To the front of the airplane was an open field that sloped down approximately 10 degrees. Only the trees within 40 feet of the airplane displayed freshly broken branches and scrape marks. In addition, the dish portion of the weather radar antenna was damaged on its vertical axis only. No impact damage was observed on the transceiver portion of the antenna, which was in front of the dish.

Approximately 80 percent of the airplane was consumed in a post-crash fire. The majority of damage was in the left wing and cabin area. All major airframe components were accounted for at the scene. Flight control continuity was established from all four flight-control surfaces to the cockpit area. The pilot's control yoke was consumed by fire. Aileron, rudder, and elevator trims were approximately neutral. The landing gear up-locks were engaged, and both the left and right flap actuators were consistent with a flaps retracted configuration.

Approximately 90 percent of the left wing was consumed by fire. The left flap was in two sections, and the inboard section was attached to the wing. The outboard section was laying next to the tail. The left wing inboard aileron hinge, along with a section of the aileron, was attached to the wing. The outboard section was not recovered. The outboard 3 feet of the left wing was inverted, pointed aft, and severely damaged by fire. The left engine was partially attached to the wing. The propeller and spinner were attached to the engine, and the blades were horizontal to the ground. Approximately 2 feet of each of the left propeller blades were

missing. One of the missing blades was melted, and laying on the ground under the propeller. No "S" bending or leading edge gouges were observed on either blade.

The tail section was intact, and displayed no fire damage or soot. In addition, the tail section was bent to the right approximately 5 degrees along its longitudinal axis, and twisted to the right approximately 45 degrees. The vertical stabilizer was intact and no damage was observed. The right horizontal stabilizer was bent up about 45 degrees.

Approximately 70 percent of the right wing was consumed by fire, with the majority of the damage inboard. The right flap and right aileron were intact and attached to the wing. The right engine was bent to the right about 20 degrees, and was partially attached to the wing. The propeller and spinner were attached to the engine. No damage was observed on one of the propeller blades. The other blade was stuck in the ground all the way to the spinner. When the blade was removed, the hole that remained in the ground was not elongated in any direction. In addition, it had approximately the same dimensions as the blade. No "S" bending or leading edge gouges were observed on either blade.

TEST AND RESEARCH

The engines were moved to the Cynthiana Airport, Cynthiana, Kentucky, and examined on February 16, 2000. Both engines displayed damage consistent with impact and a post-crash fire. The left engine was damaged more than the right, with the rear of the left engine exhibiting the majority of the damage. No evidence of an in-flight fire was observed on either engine during the examination.

On the left engine, crankshaft, piston, and valve train continuity were confirmed. No metal contaminates were observed in the left engine oil system. In addition, continuity of the oil system was verified. The top sparkplugs were removed. They were absent of debris, and grayish in color. Continuity of the accessory section was confirmed. The engine driven fuel pump was removed and disassembled. The shear coupling was intact, along with the vanes and vane housing. The engine driven vacuum pump and both magnetos were destroyed. The fuel servo was separated from the engine, and fragmented. The fuel screen was removed. No contaminates other than soot were observed. The throttle plate was open, and the propeller governor was 70 percent towards feathered.

On the right engine, crankshaft, piston, and valve train continuity were confirmed. No metal contaminates were observed in the right engine oil system. In addition, continuity of the oil system was verified. The top sparkplugs were removed. They were absent of debris, and grayish in color. Continuity of the accessory section was confirmed. The engine driven fuel pump was removed. The shear coupling was intact, along with the vanes and vane housing. Both magnetos displayed impact and fire damage. A rotational force was applied to both, but spark was not obtained on either unit. The engine driven vacuum pump was removed and disassembled. The shear coupling was melted, but intact. The vane housing and vanes were also intact. The fuel servo was separated from the engine, and fragmented. The fuel screen

was removed. No contaminates were observed other than soot. The throttle plate was 80 percent closed, and the propeller governor was in the feathered position.

On March 1, 2000, the left and right propellers were examined at Hartzell Propellers in Piqua, Ohio, under the supervision of the Safety Board.

The inside of the left propeller spinner had impact marks in the shape of the counter weights. The positions of the marks were consistent with a low blade angle. When the spinner was removed, both blades rotated approximately 20 degrees towards feather. In addition, the pre-load plate on the No. 1 blade had impact marks at 15 degrees and 20 degrees relative to the split line. The pitch change rod had a discoloration band that started 2.0625 inches from the bottom of a series of threads that held the pitch change fork. The impact marks on the pre-load plates and the discoloration on the pitch-change rod were consistent with a low blade angle at impact. The left propeller governor was disassembled. No pre-impact failures were identified.

The inside of the right propeller spinner had impact marks in the shape of the counter weights. The positions of the marks were consistent with a low blade angle. In addition, the pre-load plate on the No. 1 propeller blade had an impact mark at 30 degrees and 40 degrees relative to the split line. The pre-load plate on the No. 2 propeller blade had an impact mark at 36 degrees relative to the split line. The right propeller governor was disassembled, and no pre-impact failures were identified.

According to a radar study conducted by the Safety Board's Office of Research and Engineering, when the airplane began to climb from 10,100 to 12,000 feet, calibrated airspeed (CAS) began to decay. By the time the airplane had reached 11,200 feet, the CAS had dropped had from approximately 145 knots to 85 knots. In addition, the airplane's angle-of-attack was 3 to 4 degrees before the climb, and approximately 8.8 degrees near the top of the climb.

According to the pilot's operating handbook (POH), minimum airspeed for icing conditions was 130 knots CAS. The listed stall speed was approximately 82 knots CAS, with flaps up, gear up, both engines at idle, and an operating weight of 5,400 pounds. In addition the airplane was approved for flight into known icing conditions.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot and passengers on February 15, 2000, at the Medical Examiners Office in Frankfort, Kentucky.

A toxicological test was performed on the pilot by the Federal Aviation Administrations Toxicology and Accident Research Laboratory, Oklahoma City, Oklahoma, on April 10, 2000.

ADDITIONAL INFORMATION

The wreckage was released to the owner's representative on March 20, 2000.

Pilot Information

Certificate:	Private	**Age:**	48,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 1, 1999
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	511 hours (Total, all aircraft), 24 hours (Total, this make and model), 431 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N875JC
Model/Series:	58 58	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TH-575
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	January 3, 2000 Annual	**Certified Max Gross Wt.:**	5400 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	4241 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	IO-520
Registered Owner:	BETTENHAUSEN MOTORSPORTS, INC	**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LEX ,979 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	11:54 Local	**Direction from Accident Site:**	206°
Lowest Cloud Condition:	Unknown	**Visibility**	1 miles
Lowest Ceiling:	Overcast / 300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	2°C / 2°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	KINGSPORT , TN (TRI)	**Type of Flight Plan Filed:**	IFR
Destination:	INDIANAPOLIS , IN (EYE)	**Type of Clearance:**	IFR
Departure Time:	10:35 Local	**Type of Airspace:**	Class C

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	38.379337,-84.290214(est)

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	JOHN COX; LOUISVILLE , KY HAROLD BARRENTINE; WITCHITA , KS TOM MCCREARY; PIQUA , OH
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Last Revision Date:	
Investigation Class:	Class
Note:	
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