Aviation Investigation Final Report

Location:	Flat Rock, North Carolina	**Accident Number:**	ATL05FA008
Date & Time:	October 23, 2004, 09:45 Local	**Registration:**	N18303
Aircraft:	Beech F33A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Review of records revealed the pilot was cleared for departure, and at 0942 radar contact was established with the airplane, and the pilot was instructed to turn left direct Sugarloaf VOR. Witnesses estimated the weather to be 200-300 feet overcast with 1 1/2 miles visibility in fog. At 0945, radar contact was lost with the airplane. Examination of the wreckage site revealed the downed airplane was located approximately four miles east from the Hendersonville Airport, at the base of a hill in a nose down attitude. All flight control surfaces, flight controls, engine and propeller were located at the site. Post accident examination of the engine revealed the crankshaft was rotated and valve train movement was confirmed to all of the cylinders, oil pump, and pistons. The three propeller blades displayed chord-wise scoring, and the blades were bent aft. The left and right wing assemblies were attached to the fuselage and crush damaged. The cockpit and empennage was crushed damaged. The vertical and horizontal flight surfaces and controls were crush damaged. From Advisory Circular 61-23C (Pilot's Handbook of Aeronautical Knowledge), revised 1997: Chapter 9 - Spatial Disorientation and Illusions in Flight Many different illusions can be experienced in flight. Some can lead to spatial disorientation. Others can lead to landing errors. Illusions rank among the most common factors cited as contributing to fatal aircraft accidents. Various complex motions and forces and certain visual scenes encountered in flight can create illusions of motion and position. Spatial disorientation from these illusions can be prevented only by visual reference to reliable, fixed points on the ground or to flight instruments. The most overwhelming of all illusions in flight may be prevented by not making sudden, extreme head movements, particularly while making prolonged constant-rate turns under instrument flight rule instrument conditions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot experienced spatial disorientation, which resulted in a loss of control and the subsequent collision with the ground. Factors were low ceilings and fog.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) WEATHER CONDITION - FOG

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On October 23, 2004, at 0945 eastern daylight time, a Beech Bonanza F33A, N18303, registered to Air Equipment Inc. and operated by a private pilot, collided with the ground in the vicinity of Flat Rock, North Carolina. The personal flight was conducted under the provisions of Title 14 CFR Part 91 with an instrument flight plan filed. Instrument meteorological conditions prevailed at the time of the accident. The flight originated from Hendersonville Airport, Hendersonville, North Carolina, on October 23, 2004 at 0938.

At 0839, the pilot telephoned the Raleigh Automated Flight Service Station and requested a weather briefing from Hendersonville, North Carolina to Portsmouth, Virginia. After the weather information was given to the pilot he filed an instrument flight plan.

At 0938, the pilot was cleared for departure, and at 0942 radar contact was established with the airplane, and the pilot was instructed to turn left direct Sugarloaf VOR. After failing to respond to several calls, the pilot's reply transmission to the inquiry about his altitude cut out after "three thou". The pilot was instructed to climb at a good rate through 5500 feet. At 0945 radar contact was lost with the airplane.

According to witnesses the pilot waited at Hendersonville Airport for approximately one hour for improved weather conditions before departing. Witnesses estimated the weather to be 200-300 feet overcast with 1 1/2 miles visibility in fog. The witnesses observed as the airplane departed southeast on runway 14, climb out, and leveled off above the treetops under the cloud layer. Shortly after a radio call was heard from the Asheville approach stating "radar contact". Approximately 10 minutes later Asheville approach called the airport and asked if the airplane had returned to the airport because radar contact had been lost.

A witness near the accident site reported hearing an airplane "rev-up and idle down 3-times". The airplane sounded like it was making circles". First responders to the accident site reported foggy conditions at the time and location of the accident. The downed airplane was located in a ravine at the base of a hill in a nose down attitude.

PERSONNEL INFORMATION

Review of the pilot's flight records revealed, he was issued a private pilot certificate on March 23, 2004, with airplane single- engine land and an instrument rating. Review of the pilot's logbook revealed he had a total flight time of 255 hours, and 35 flight hours in model and make. The private pilot held a third class medical certificate dated January 22, 2003, with no restrictions. Review of the private pilots logbook revealed that the pilot had 2.5 flight hours of

actual instrument time, 59.7 flight hours of simulated instrument time, and the last instrument proficiency check was completed on October 14, 2004.

AIRCRAFT INFORMATION

Review of aircraft maintenance logbooks revealed that the last recorded altimeter, static, and transponder system checks were completed on July 2, 2004. The last annual inspection was conducted on July 02, 2004. The tachometer time, and total aircraft time at the annual inspection was 2915.7 hours.

METEOROLOGICAL INFORMATION

The weather forecast for Asheville effective at 1045 eastern daylight time, forecasted wind 140 degrees at five knots, visibility two statue miles, mist, ceiling seven hundred feet overcast, temperature 12 degrees Celsius, dew point 10 degrees Celsius, and an altimeter setting 30.20.

WRECKAGE EXAMINATION

Examination of the wreckage site revealed the airplane rested approximately four miles east from the Hendersonville Airport, at the base of a hill. All flight control surfaces, flight controls, engine and propeller were located at the site. The engine assembly was located at the base of a 6-foot crater with the propellers still attached at the hub. The propellers displayed chord-wise scoring, and the blades were bent aft. The left and right wing assemblies were attached to the fuselage. The cockpit and empennage was crushed damaged. The vertical and horizontal flight surfaces and controls were crush damaged.

Post accident examination of the airframe revealed, the main fuselage, and cockpit section of the airplane was crushed, and broken. All flight control, navigational instruments, and radios were crushed.

Post accident examination of the left wing assembly displayed accordion crush damage to the skin of the leading edge of the wing. The left wing assembly was crush damaged, and fragmented. The left aileron flight control cables were traced throughout the airframe to the cockpit flight controls. Flight control cable ends were attached to the aileron attachment fittings. The flap was attached and in the retracted position. The left main landing gear was in the down position.

Post accident examination of the right wing assembly displayed accordion crush damage to the skin of the leading edge of the wing. The right wing assembly was crush damaged. The right aileron flight control cables were traced throughout the airframe to the cockpit flight controls. Flight control cable ends were attached to the aileron attachment fittings. The flap was attached and in the retracted position. The right main landing gear was in the down position.

Post accident examination of the vertical and horizontal stabilizer revealed the left and right horizontal stabilizer was buckle and the elevator was buckled. Examination of the vertical stabilizer and rudder revealed it they were buckled. Post examination of the airframe did not reveal any flight control anomalies.

Post accident examination of the engine revealed the engine was intact with all external accessories attached except both magnetos, which were hanging, by the ignition leads. The number three cylinder was damaged. The aft exhaust pipes were separated, and the oil sump was crushed. The crankshaft was rotated and valve train movement was confirmed to all of the cylinders and to the oil pump, and all pistons were moving. The oil filter was crushed. The oil filter element was opened and no metal particles were observed in the element. The propeller governor was displaced to the rear, and separated from the engine case. The propeller governor drive coupling was separated, and the outer case was crushed with actuating arm separated.

Post accident examination of the fuel manifold revealed that it was crush damaged. The fuel screen was clean and clear. The fuel metering unit screen was clean and clear. Examination of the fuel pump revealed that the pump was attached the engine. The drive coupling was not damaged, and the drive shaft was free to rotate. The unit was disassembled and no internal damaged was observed.

Post accident examination of the magnetos revealed the right magneto was damaged and when rotated produced spark at all terminals. The left magneto was damaged and the points and condenser was crushed.

Post accident examination of the vacuum pump revealed that the pump was intact and damaged. The drive coupling was not damage, and rotated. The unit was dissembled and no internal damage was observed, and all rotor vanes were in place.

Post accident examination of the propeller revealed that it was still attached to the spinner. Both Blades exhibited bending and twisting on the propeller assembly. All blades had varying degrees of lead edge damage and rotational scoring.

PATHOLOGICAL INFORMATION

The Office of the Chief Medical Examiner, Chapel Hill, North Carolina preformed the postmortem examination of the private pilot on October 26, 2004. The reported cause of death was blunt force trauma. The postmortem toxicology specimens from the pilot were negative for carbon monoxide, cyanide, drugs and alcohol.

ADDITIONAL INFORMATION

The wreckage of the airplane was released to Leading Edge Investigations on August 8, 2005.

From Advisory Circular 61-23C (Pilot's Handbook of Aeronautical Knowledge), revised 1997: Chapter 9 - Spatial Disorientation and Illusions in Flight Many different illusions can be experienced in flight. Some can lead to spatial disorientation. Others can lead to landing errors. Illusions rank among the most common factors cited as contributing to fatal aircraft accidents. Various complex motions and forces and certain visual scenes encountered in flight can create illusions of motion and position. Spatial disorientation from these illusions can be prevented only by visual reference to reliable, fixed points on the ground or to flight instruments. The most overwhelming of all illusions in flight may be prevented by not making sudden, extreme head movements, particularly while making prolonged constant-rate turns under instrument flight rule instrument conditions.

Pilot Information

Certificate:	Private	**Age:**	50,Male
Airplane Rating(s):	Single-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 Without waivers/limitations	**Last FAA Medical Exam:**	January 1, 2003
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 1, 2004
Flight Time:	255 hours (Total, all aircraft), 50 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N18303
Model/Series:	F33A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	CE-725
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 1, 2004 Annual	**Certified Max Gross Wt.:**	3500 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2915.7 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550
Registered Owner:	James L. Jurnigan	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AVL,2165 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	10:54 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Unknown	**Visibility**	2 miles
Lowest Ceiling:	Overcast / 700 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	150°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	12°C / 10°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	HENDERSONVILLE, NC (0A7)	**Type of Flight Plan Filed:**	IFR
Destination:	PORTSMOUTH, VA (PVG)	**Type of Clearance:**	IFR
Departure Time:	10:50 Local	**Type of Airspace:**	

Airport Information

Airport:	HENDERSONVILLE 0A7	**Runway Surface Type:**	
Airport Elevation:	2084 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.315555,-82.353057

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric
Additional Participating Persons:	Darlene R Somers; FSDO-33 CLT; Charlotte, NC John Kent; Teledyne Continental Motors; Mobile , AL Paul E Yoos; Raytheon; Wichita, KS
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Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60455