



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Rock Hill, South Carolina	Accident Number:	ERA09FA515
Date & Time:	September 11, 2009, 07:15 Local	Registration:	N922XX
Aircraft:	Cirrus SR-22	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot, who usually flew with a certificated flight instructor copilot, intended to practice takeoffs and landings in the high performance airplane. Information retrieved from the airplane's remote data module, a crash-hardened unit installed in the tail of the airplane intended to record flight, engine and autopilot parameters, indicated that the airplane accelerated and lifted off runway 2 normally. The airplane then made a slight right turn for about 35 seconds, which transitioned to a left turn. Approximately 9 seconds later, the roll attitude reached 46 degrees left wing down, and the airplane reached its maximum altitude of 1,241 feet mean sea level, about 575 feet above ground level. Over the next 20 seconds, the turn continued at about the same roll attitude (40-50 degrees left wing down), as the speed increased to 158 knots. Shortly thereafter, the airplane's pitch attitude began to decrease toward a peak of 10 degrees nose down, and the roll attitude began a sharp change toward the right, reaching about 70 degrees right wing down, by the end of the recorded data. The last recorded data points included a heading of 165 degrees, an engine rpm of 2,687, an indicated airspeed of 184 knots, and a vertical descent rate of 2,064 feet-per-minute. The stall warning parameter indicated "off" (not stalled) for the duration of the flight.

The airplane initially impacted the ground about 100 feet below the top of a 20-degree slope, about 150 feet from a taxiway, and 255 feet right of the extended center line of runway 20. The airplane was destroyed by fire and impact forces. Fragments of the right wing tip were located near the initial impact point. A debris path, oriented on a 160-degree heading, extended for about 400 feet.

The airplane had been operated for approximately 93 hours since new. Examination of the

wreckage and recorded data did not reveal evidence of any preimpact mechanical malfunctions. At the time of the accident, the pilot had accumulated about 390 hours of total flight experience, all in the same make and model as the accident airplane. It was also noted that all logged flights in the accident airplane, with the exception of a 1.4 hour flight about two months prior to the accident, included a flight instructor onboard.

The pilot had a history of attention deficit disorder and depression (both previously treated with medications) and of anxiety (for which he had previously been hospitalized and for which he had been prescribed a potentially impairing medication for use "as needed"). None of this information had been reported to the Federal Aviation Administration. The pilot was at risk (but had not been evaluated) for obstructive sleep apnea because of his history of snoring, obesity, and high blood pressure. It is possible that the pilot was experiencing symptoms of his unreported mental conditions, that he was fatigued due to undiagnosed obstructive sleep apnea, or that he had recently used an anti-anxiety medication at the time of the accident. While it is possible that impairment from one or more of those sources could have adversely impacted his performance during the accident sequence, the investigation was unable to determine the role that impairment may have played in the accident.

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 aircraft control and altitude while maneuvering after takeoff.

Findings

Aircraft	(general) - Not attained/maintained
Aircraft	Altitude - Not attained/maintained
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering	Loss of control in flight (Defining event)
Maneuvering	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On September 11, 2009, about 0715 eastern daylight time, a Cirrus SR-22, N922XX, was destroyed when it impacted terrain while maneuvering after takeoff, at the Rock Hill Airport (UZA), Rock Hill, South Carolina. The certificated private pilot was killed. Visual meteorological conditions prevailed and no flight plan had been filed for the local flight. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

The airplane was owned by the pilot through a limited liability company and based at UZA.

According to the pilot's wife, the pilot normally flew with a copilot, who was also a certificated flight instructor (CFI). The pilot, his wife, and the CFI flew to Teterboro Airport (TEB), Teterboro, New Jersey, on September 7, 2009. The pilot and CFI returned to UZA on September 9, 2009, and planned to return to TEB, on September 13, 2009. The pilot's wife stated that the purpose of the accident flight was for the pilot to practice takeoffs and landings by himself.

A witness located at the UZA airport terminal, observed the airplane depart from runway 2, a 5,500-foot-long, 100-foot-wide, asphalt runway. After takeoff, the airplane made a shallow right turn and disappeared from his view. In addition, the witness and another individual both stated that they did not hear any communications from the pilot over the airport's common traffic advisory frequency.

A third witness, who lived near the airport, reported that he heard a "loud" engine noise, looked up, and observed an airplane in a vertical (90-degree bank) left turn. It was traveling "really fast" and the engine sounded "like it was at full-throttle." The airplane disappeared below the tree line and was followed by the sound of a "muffled-boom" and rising smoke.

PERSONNEL INFORMATION

The pilot, age 49, held a private pilot certificate, with a rating for airplane single-engine land. According to Federal Aviation Administration (FAA) records, the pilot received his private pilot certificate on November 21, 2008.

Review of the pilot's logbook revealed entries beginning on March 16, 2008, through August 22, 2009, for approximately 368 hours of total flight experience, of which about 333 hours were

logged as "dual received." It was also noted that all flights in the accident airplane, with the exception of a 1.4 hour flight on July 15, 2009, included a flight instructor onboard. It was estimated that at the time of the accident, the pilot had accumulated about 390 hours of total flight experience, all in the same make and model as the accident airplane.

The pilot's most recent FAA second-class medical certificate was issued on February 21, 2008.

AIRCRAFT INFORMATION

The four-seat, low-wing, fixed-gear airplane, serial number 3455, was manufactured in 2009. It was constructed primarily of composite materials, and equipped with a Teledyne Continental Motors IO-550-N, 310-horsepower engine.

According to an FAA bill of sale, the airplane was purchased new by the pilot through a limited liability company during June 2009.

According to maintenance records, the airplane had undergone a 50-hour inspection in accordance with the Cirrus SR22 maintenance manual on August 26, 2009, about 40 hours prior to the accident.

At the time of the accident, the airplane had been operated for approximately 93 hours since new.

METEOROLOGICAL INFORMATION

A weather observation taken at UZA, which was at an elevation of 666 feet mean sea level (msl), at 0705 reported, wind from 020 degrees at 4 knots; visibility 9 statute miles; scattered clouds at 6,000 feet, temperature 16 degrees Celsius (C), dew point 14 degrees C; altimeter 30.20 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The airplane initially impacted the ground about 100 feet below the top of a 20-degree slope, about 150 feet from taxiway "B," and 255 feet right of the extended center line of runway 20. The airplane was destroyed by fire and impact forces. Fragments of right wingtip were located near the initial impact point. A debris path, oriented on a 160-degree magnetic heading, extended for about 400 feet. Evidence of burnt terrain was observed on the left and right side of the debris path, on an embankment leading up to the taxiway.

The airplane was equipped with a Cirrus Airplane Parachutes System (CAPS). The parachute assembly was observed deployed, along the debris path; however, examination of the parachute assembly was consistent with activation due to impact forces.

Both wings and all control surfaces were separated and strewn along the debris path, with the

majority of the fuselage structure. The main wreckage was located 205 feet from the initial point of impact, and consisted of a top portion of the fuselage from the "b-pillar," aft to the forward side of the CAPS enclosure. A portion of the fuselage station 222 bulkhead was also located with the main wreckage.

The roll trim motor was observed in an approximate neutral position. The flap actuator corresponded to the "flaps up" position.

All major components of the airplane were accounted for at the accident site.

The engine and engine cowling assembly separated from the airframe and came to rest about 70 feet from the initial impact point. The engine remained attached to the firewall via the control cables. The engine exhibited extensive impact and fire related damage. Portions of the No. 1 and No. 5 cylinder head assemblies were separated. The majority of engine accessories, which included both magnetos, the oil filter, the oil cooler, and both turbochargers were separated from the engine.

A borescope inspection of all engine cylinders did not reveal any preimpact failures. The No.1 cylinder was impact damaged and the exhaust valve seat was separated from the cylinder head. After removing several components from the engine, including the No.1 cylinder, the engine was rotated via the crankshaft propeller flange. Thumb compression and valve train continuity were established on cylinders No.2, 3, 4, and 6. Thumb compression and valve train continuity could not be established on cylinders No.1, and No.5 due to impact related damage. The fuel pump remained attached to the engine and did not exhibit any preimpact failures. Both magnetos were separated from their respective mounting locations and sustained impact and fire damage.

The propeller hub remained attached to the engine and exhibited impact damage. All three composite propeller blades were separated from the propeller hub. They all displayed impact damage with leading edge polishing and chordwise scratching.

The airplane was equipped with a "Garmin Perspective" cockpit instrumentation system, and a remote data module (RDM). The RDM, which was a crash hardened unit installed in the tail of the airplane intended to record flight, engine and autopilot parameters, was located in the debris path and forwarded to the NTSB Vehicle Recorders Laboratory, Washington, D.C., for download.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot, on September 11, 2009, at Piedmont Medical Center, Rock Hill, South Carolina. The autopsy report indicated the cause of death as "multiple traumatic sharp and blunt force injuries secondary to plane accident."

Toxicological testing performed on the pilot by the FAA Bioaeronautical Science Research

Laboratory, Oklahoma City, Oklahoma, was negative for alcohol and positive for Metoprolol detected in the pilot's liver and kidney.

The pilot's most recent application for a second-class airman medical certificate noted a history of high blood pressure and metabolic syndrome, and the use of the medications omeprazole, atorvastatin, benazepril, metoprolol, aspirin and metformin. No other medications or conditions were noted, and the most recent medical certificate application specifically indicated "No" to "Mental disorders of any sort; depression, anxiety, etc.," "Admission to hospital," and "Other illness, disability, or surgery." Height and weight on that application were noted to be 74 inches and 248 pounds, and blood pressure was noted as 124/72.

The pilot's previous application for a third-class airman medical certificate was dated November 13, 1992. Review of the pilot's primary care records indicated additional diagnoses, prior to the pilot's most recent application for an airman medical certificate, of attention deficit disorder (with prior use of the prescription medication amphetamine/dextroamphetamine), depression (with prior use of the prescription medications bupropion and fluoxetine), anxiety (with hospitalization for anxiety in 2001 and use of the prescription medication clonazepam "0.5 mg three times a day as needed"), and ENT surgery in 2006 for severe snoring (with no indications that a sleep study had been performed). The pilot's weight on a February 10, 2009, physician's office visit was noted as 265 pounds.

TESTS AND RESEARCH

The RDM was successfully downloaded by an NTSB Vehicle Recorder Specialist. Examination of the RDM data revealed that it recorded about 90 hours of data, which included the accident flight. The data was logged once per second.

Review of the data for the accident flight revealed that the pilot began the takeoff about 0712:11, when the engine rpm was advanced to about 2700 rpm. The airplane proceeded along a heading of about 020 degrees magnetic, consistent with runway 2. Takeoff rotation occurred at an airspeed of 74 knots. At 0712:31, the airplane began a slight right turn. This turn lasted about 35 seconds, and generally varied from about 5 to 8 degrees of right roll, with a peak of about 17 degrees. During the turn, the airspeed and altitude continued to increase. At 0713:06, at an altitude of 1,051 feet msl, about 385 feet above ground level (agl) and a speed of about 133 knots, the right turn transitioned into a left turn. By 0713:15, the roll attitude had reached 46 degrees left wing down. At about the same time, the airplane reached its maximum altitude of 1,241 feet msl (about 575 feet agl). Over the next 20 seconds, the turn continued at about the same roll attitude (40-50 degrees left wing down), with the pitch remaining relatively level (within about 2 degrees up or down) as the speed increased to 158 knots. At 0713:34, the pitch attitude began to decrease toward a peak of 10 degrees nose down. At 0713:40, the roll attitude began a sharp change toward the right, reaching about 70 degrees right wing down by the end of the recorded data. The last recorded data points included the following:

Engine: 2,687 RPM

Heading: 165 degrees magnetic
Indicated Airspeed: 184 knots
Pitch Attitude: 5 degrees nose down
Roll Attitude: 69 degrees right wing down
Vertical Speed: 2064 feet per minute downward
Corrected Altitude 784 feet msl

It was noted that the stall warning parameter indicated "off" (not stalled) for the duration of the flight.

Pilot Information

Certificate:	Private	Age:	49, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	February 21, 2008
Occupational Pilot:	No	Last Flight Review or Equivalent:	November 21, 2008
Flight Time:	(Estimated) 400 hours (Total, all aircraft), 400 hours (Total, this make and model), 50 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cirrus	Registration:	N922XX
Model/Series:	SR-22	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	3455
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	August 26, 2009 AAIP	Certified Max Gross Wt.:	3400 lbs
Time Since Last Inspection:	40 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	93 Hrs at time of accident	Engine Manufacturer:	TCM
ELT:	C91A installed, activated, did not aid in locating accident	Engine Model/Series:	IO-550-N
Registered Owner:	Beck Management Group LLC	Rated Power:	310 Horsepower
Operator:	Beck Management Group LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	UZA,666 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	07:05 Local	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	9 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.2 inches Hg	Temperature/Dew Point:	16°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Rock Hill, SC (UZA)	Type of Flight Plan Filed:	None
Destination:	Rock Hill, SC (UZA)	Type of Clearance:	None
Departure Time:	07:12 Local	Type of Airspace:	

Airport Information

Airport:	Rock Hill UZA	Runway Surface Type:	Asphalt
Airport Elevation:	666 ft msl	Runway Surface Condition:	Dry
Runway Used:	02	IFR Approach:	None
Runway Length/Width:	5500 ft / 100 ft	VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	34.987777,-81.056945(est)

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Robert Switter; FAA/FSDO; West Columbia, SC Jason Lukasik; Teledyne Continental Motors, Inc.; Mobile, AL Bradley T Miller; Cirrus Design Corporation; Duluth, MN
Original Publish Date:	January 7, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=74707

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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](#).