Aviation Investigation Final Report

Location:	North Myrtle Beach, South Carolina	**Accident Number:**	ERA10FA359
Date & Time:	July 14, 2010, 20:54 Local	**Registration:**	N2825A
Aircraft:	Piper PA-28RT-201	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot held an instrument rating, but lacked recent instrument or night experience. He flew the airplane to a coastal airport uneventfully and subsequently left a message with the operator that he would be returning later than anticipated because he was waiting for convective weather to clear. The pilot received a standard weather briefing from flight service personnel for an instrument flight rules return flight. The weather briefer advised of a convective sigmet along the coast, with the largest cell just west of the departure airport. The briefer recommended either a northeast departure or a southwest departure, to remain clear of the large cell, before flying west on-course to the destination airport. Review of radar data revealed that convective weather, with associated strong intensity echoes, was present about 12 miles west of the departure airport. After takeoff, the airplane turned left about 180 degrees and proceeded northeast along the coast. The radar track then varied between north and northeast until about 5 minutes after takeoff, when the airplane reach a height of 2,300 feet mean sea level and began a right descending turn. The last radar target was recorded about 5 miles northeast of the departure airport, indicating an altitude of 1,800 feet. The recorded weather at the departure airport included a broken ceiling at 1,100 feet, overcast ceiling at 2,000 feet, and a remark of distant lightning west of the airport. Although the official end of civil twilight occurred 1 minute after the accident, the combination of a dark dusk sky, multiple cloud ceilings, precipitation, and the distraction of maneuvering around a large convective cell, would have been challenging for a pilot with limited recent actual instrument experience.

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 while maneuvering in instrument meteorological conditions around a thunderstorm. Contributing to the accident was the pilot's lack of recent

actual instrument experience.

Findings

Personnel issues	Aircraft control - Pilot
Environmental issues	(general) - Effect on personnel
Personnel issues	Recent instrument experience - Pilot

Factual Information

History of Flight

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

HISTORY OF FLIGHT

On July 14, 2010, at 2054 eastern daylight time, a Piper PA-28RT-201, N2825A, owned by a private individual and operated by Concord Regional Flight Services, was substantially damaged during impact with trees and a residence in North Myrtle Beach, South Carolina. The certificated private pilot and two passengers were killed. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the planned flight to Concord Regional Airport (JQF), Concord, North Carolina. The flight originated from Grand Strand Airport (CRE), North Myrtle Beach, South Carolina, at 2049.

According to the operator, the airplane was based at JQF. The accident pilot received a 1-hour "checkout" with a certified flight instructor (CFI) on July 6, 2010, so that he could rent the airplane. The pilot was supposed to fly again, solo, on July 12, to satisfy night currency requirements; however, he canceled that flight due to adverse weather. The pilot then rented the airplane on the day of the accident, with the stipulation that he return it by 2030, due to his lack of night currency. He flew to CRE uneventfully, but subsequently left a message with the operator that he would return to JQF later than 2030 because he was waiting for convective weather to clear.

According to air traffic control data from the Federal Aviation Administration (FAA), the pilot contacted CRE ground control about 2040 to obtain his IFR clearance. The controller provided the clearance to JQF, which included an "as filed" instruction, maintain 2,000 feet mean sea level, and expect 6,000 feet 10 minutes after departure. The pilot read back the clearance correctly. He then contacted CRE ground control again 1 minute later, and received taxi instruction to runway 23. The pilot contacted CRE local control at 2046 and advised that he was ready to depart on runway 23. The local controller then cleared the flight for takeoff and instructed the pilot to proceed "on course," which the pilot acknowledged. After takeoff, at 2048, the local controller instructed the pilot to contact Myrtle Beach International Airport (MYR), Myrtle Beach, South Carolina departure control. The pilot contacted MYR departure at 2049, while climbing through 500 feet. The MYR departure controller acknowledged the pilot's transmission, advised that the airplane was radar identified at 700 feet, and instructed the pilot to proceed on course, which the pilot also acknowledged. No further communications were received from the accident airplane.

The first waypoint on the pilot's IFR flight plan was Columbus County Municipal Airport (CPC), Whiteville, North Carolina, which was approximately 25 miles north of CRE. Review of radar data revealed that convective weather, with associated strong intensity echoes, was present about 12 miles west of CRE; however, the pilot's planned route to fly north to CPC and then west, would keep the flight clear of the convective activity. After takeoff, the airplane turned left about 180 degrees and proceeded northeast along the coast. The radar track then varied between north and northeast until 2053, when the airplane reach a height of 2,300 feet and began a right descending turn. The last radar target was recorded at 2054:12, about 5 miles northeast of CRE, at an altitude of 1,800 feet.

Six individuals provided written witness statements. The witnesses generally described the airplane flying low, followed by impact. Three witnesses reported hearing continuous engine noise prior to impact, while two witnesses stated the engine was "missing" or "cutting in and out," and one witness did not recall noise. Three witnesses reported seeing flames prior to impact and three did not report any flames.

PERSONNEL INFORMATION

The pilot, age 54, held a private pilot certificate, with ratings for airplane single-engine land and instrument airplane. His most recent FAA third-class medical certificate was issued on March 27, 2009. At that time, the pilot reported a total flight experience of 640 hours. According to the CFI that provided the pilot's most recent "checkout" in the accident airplane, the pilot remarked that he had accumulated "about 100 hours in Piper Arrows."

The pilot's logbook was recovered from the wreckage. Although the logbook was fire damaged, some of the pages were legible. The last entry in the logbook was dated "7/6," and at that time, the pilot had logged a total flight experience of 690.7 hours. The previous flight was dated "5/27," and the flight before that was dated "2/27."

According to the logbook, the pilot's total actual instrument experience was 24.1 hours and his total simulated instrument experience was 69 hours. His total night experience was 112 hours. The pilot's most recent night flight was 1.1 hours on "5/27" and his most recent actual instrument experience was 0.5 hours on "2/8." The pilot completed a 1.9-hour flight review on "8/19."

AIRCRAFT INFORMATION

The four-seat, low-wing, retractable-gear airplane, serial number 28R-7918162, was manufactured in 1979. It was powered by a Lycoming, IO-360, 200-horsepower engine. Review of the aircraft logbooks revealed that the airplane's most recent annual inspection was completed on February 18, 2010. At that time, the airplane had accumulated 8,259.4 hours of operation. The engine had accumulated 4,814.4 total hours of operation, and 1,142.4 hours of operation since major overhaul. The airplane had flown about 84 hours since the annual inspection.

METEOROLOGICAL INFORMATION

The pilot telephoned flight service at 2002 and received a standard weather briefing for an IFR flight from CRE to JQF. The weather briefer advised of a Convective Sigmet along the entire coast of North Carolina, to south of MYR, with the largest cell just west of CRE. The briefer recommended either a northeast departure toward CPC, or a southwest departure toward Georgetown County Airport (GGE), Georgetown, South Carolina, to remain clear of the large cell. The routing northeast via CPC was shorter to the destination airport; however, the routing southwest via GGE would ensure that the flight remained clear of all precipitation, in addition to the convective activity. The pilot advised that he would do some planning and call back to file an IFR flight plan.

The pilot called flight service again at 2015 to file an IFR flight plan, which included a chosen northeast routing via CPC as the first waypoint.

The reported weather at CRE, at 2053, was: wind from 220 degrees at 11 knots; visibility 10 miles; broken ceiling at 1,100 feet, overcast ceiling at 2,000 feet; temperature 29 degrees Celsius; dew point 26 degrees Celsius; altimeter 30.02 inches of mercury; and a remark of distant lightning west of the airport.

According to U.S. Naval Observatory data, sunset was at 2027, and the end of civil twilight was at 2055.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located in a residence about 5 miles northeast of CRE, and examined on July 15 and 16, 2010. All major components of the airplane were accounted for at the scene. A debris path originated at the rear of the residence, where severed trees were observed. The right wingtip and glareshield fragments were located at the base of the trees. The debris path extended about 45 feet, on an approximate 225-degree magnetic heading to the residence. The airplane came to rest upright on a heading of about 225 degrees magnetic. A postcrash fire consumed a majority of the wreckage.

The left wing was located near the rear of the residence. It was separated about mid-span and partially consumed by fire. The left flap and left aileron remained attached to the left wing. The left main landing gear had separated from the left wing. The left aileron bellcrank remained attached to the left wing and the aileron control cables remained attached to the left aileron bellcrank. The control cables extended about 5 feet from the left aileron bellcrank and exhibited broomstraw separation at the cable ends. The right wing was located near the front of the residence. The right wing did not sustain fire damage and exhibited impact damage. The right flap and right aileron had separated from the right wing and were located near the right wingtip, at the beginning of the debris path. The right main landing gear remained retracted in the right wing. The right aileron control cables exhibited broomstraw separation near the wing

root.

The vertical stabilizer was located near the right wing. The rudder remained attached to the vertical stabilizer. The left and right inboard sections of horizontal stabilator remained attached to the spar. The outboard portions of the stabilator were destroyed by impact and fire damage. The measurement of the horizontal stabilator jackscrew revealed 5 threads, which equated to an approximately neutral setting.

The cockpit was located near the left wing and had been consumed by fire. Rudder, stabilator, and stabilator trim control continuity were confirmed from the cockpit area to the mid cabin area. The flap handle was found in the 10-degree flap extended position. The fuel selector handle was positioned near the left main fuel tank setting. Only three identifiable instruments were recovered from the cockpit. The autopilot coupler was positioned to "NAV," the suction gauge needle indicated "0," and the tachometer needle indicated approximately 2,000 rpm. The nose landing gear had separated and was located near the cockpit. One gyro was recovered from the cockpit; however, it was not determined if the gyro was related to the directional gyro or the attitude indicator. The gyro housing was disassembled and light rotational scoring was noted on the housing.

No soot-pattern striations were observed on any of the wreckage.

The engine was located near the right wing. One propeller blade was separated from the hub and the other remained attached. The separated propeller blade exhibited s-bending and chordwise scratching. The propeller blade that remained attached exhibited chordwise scratching and tip curling. The engine sustained impact damage and fire damage, which precluded rotation of the crankshaft by hand. The underside of the engine case was compromised, which allowed additional access for a borescope. A borescope examination of the cylinders and underside of the engine case did not reveal any evidence of catastrophic failure or lack of oil lubrication. The top spark plugs were removed for inspection; their electrodes were intact and light gray in color. Both magnetos produced spark at all towers when rotated by hand. The oil filter was opened for inspection and no metallic contamination was observed. The vacuum pump remained attached to the engine and was disassembled for inspection. The drive coupling had been consumed by fire, but the rotor and rotor vanes remained intact. Rotational scoring was noted on the base of the rotor.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Horry County Coroner, Conway, South Carolina, on July 15, 2010. The autopsy report noted the cause of death as "multiple trauma sustained in airplane crash."

Toxicological testing was performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicology report revealed the presence of ethanol, methanol, and n-propanol; however, putrefaction was note as "yes" and the report

also noted, "The ethanol found in this case is most likely from sources other than ingestion."

Pilot Information

Certificate:	Private	**Age:**	54,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 With waivers/limitations	**Last FAA Medical Exam:**	March 27, 2009
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 19, 2009
Flight Time:	691 hours (Total, all aircraft), 100 hours (Total, this make and model), 4 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N2825A
Model/Series:	PA-28RT-201	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28R-7918162
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 18, 2010 Annual	**Certified Max Gross Wt.:**	2750 lbs
Time Since Last Inspection:	84 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	8259 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	IO-360
Registered Owner:	Robert O'Neale III	**Rated Power:**	200 Horsepower
Operator:	Concord Regional Flight Services	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	CRE,32 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	20:53 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 1100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	29°C / 26°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	North Myrtle Beach, SC (CRE)	**Type of Flight Plan Filed:**	IFR
Destination:	Concord, NC (JQF)	**Type of Clearance:**	IFR
Departure Time:	20:49 Local	**Type of Airspace:**	

Airport Information

Airport:	Grand Strand Airport CRE	**Runway Surface Type:**	
Airport Elevation:	32 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:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	33.846942,-78.632225(est)

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Daryl L McMillan; FAA/FSDO; Columbia, SC Edward Rogalski; Lycoming Engines; Williamsport, PA Ron Maynard; Piper Aircraft; Vero Beach, FL
Original Publish Date:	June 13, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76632