Aviation Investigation Final Report

Location:	Romeo, Michigan	**Accident Number:**	CHI07LA051
Date & Time:	December 31, 2006, 18:32 Local	**Registration:**	N888PR
Aircraft:	Piper PA-32-300	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal, 2 Serious, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was flying a VOR approach in instrument conditions when the accident occurred. Data indicated that the airplane entered a left standard rate turn and descended into trees approximately 2.5 miles from the airport. Two of the passengers on board reported that there was no indication of any problem during the flight. They reported that they had just descended below the clouds and thought they were landing just prior to contacting the trees. Witnesses reported moderate to heavy rain in the area at the time of the accident. A plot of the GPS data shows the airplane traveled south of the approach course. It then turned left back toward the course. The GPS data then showed that approximately 20 seconds prior to the last recorded position, the airplane entered a 2.6 degree/sec left turn, while accelerating from 99 mph to 119 mph. The last recorded GPS position was approximately 275 yards south of the accident site. Post accident inspection of the airplane and engine failed to reveal any pre-existing failure/malfunction, which would have resulted 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 proper rate of descent during the VOR approach. Factors associated with the accident were the low cloud conditions and moderate to heavy rain.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. (F) WEATHER CONDITION - CLOUDS
2. (F) WEATHER CONDITION - RAIN
3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (C) PROPER DESCENT RATE - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
5. OBJECT - TREE(S)

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
6. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 31, 2006, at 1832 eastern standard time, a Piper PA-32-300, N888PR, collided with the terrain while on the VOR/DME approach into the Romeo State Airport (D98), Romeo, Michigan. The pilot was fatally injured. Two passengers on board were seriously injured and the third passenger was not injured. The airplane was substantially damaged. The 14 Code of Federal Regulations Part 91 personal flight was operating in instrument meteorological conditions on an instrument flight rules (IFR) flight plan. The flight originated from the Cherry Capital Airport (TVC), Traverse City, Michigan, at 1700.

The pilot and passengers were returning to D98 after having flown to TVC on December 29, 2006. Upon arriving at TVC, the pilot instructed the fixed base operator to fill the inboard fuel tanks. The airplane was fueled with 24.5 gallons of fuel.

Prior to departure the pilot requested a radio check from air traffic control (ATC). The controller responded that the pilot was loud and clear. Several times during the flight, ATC was able to hear the pilot's transmissions, but the pilot was not able to hear transmissions from ATC. At other times, the pilot was able to hear ATC, but reported hearing static during the transmissions.

At 1824, the pilot was instructed to contact Selfridge Air Force Base (MTC) approach control. The pilot contacted approach control stating he was at 3,000 feet. MTC approach acknowledged the transmission and stated he was loud and clear. The pilot was then issued the MTC altimeter setting. The pilot acknowledged this transmission. The last transmission with MTC was when they instructed the pilot to cancel his IFR flight plan with flight service and approved the pilot to change to the airport advisory frequency. The pilot acknowledged and read back the instructions.

Two of the passengers, who were seated in the rear of the airplane, reported the pilot checked the weather on his computer and called for a weather briefing prior to their departure. Both of these passengers reported they were wearing headsets so the three passengers could communicate with each other during the flight while the pilot was on his own channel. One of these passengers stated the flight was smooth and there were no problems. She recalled that during the flight, the pilot asked them to turn off their cell phones. Both passengers recalled descending out of the clouds at which time the front seat passenger stated, "We must be landing." One of these passengers reported that it was raining. They both recalled that the next thing they knew was the airplane contacting the trees. Both stated that the pilot did not give any indication of there being a problem during the flight. One of the passengers stated the pilot was using the autopilot during the flight, but had turned it off prior to the accident.

Witnesses reported to an Federal Aviation Administration (FAA) inspector that there was moderate to heavy rain in the area at the time of the accident.

PERSONNEL INFORMATION

The pilot, age 53, held a private pilot certificate with airplane single-engine land and instrument airplane ratings. This certificate was issued on May 18, 2005, when the pilot received his instrument rating. The pilot was issued a third-class medical certificate on December 2, 2004. The medical certificate contained the limitation "Holder shall wear corrective lenses."

A review of the pilot's logbooks revealed he had a total of 543.7 hours of flight time of which 297.7 hours were in the same make and model as the accident airplane. He had logged 38.8 hours of actual instrument flight time and 50.7 hours of simulated instrument flight time.

The pilot's last instrument proficiency check was on September 26, 2006. According to the logbook, the pilot had flown two instrument approaches into D98 in the past. Once was on December 15, 2004, when he flew the GPS-A approach. The other approach was on January 27, 2006. The type of approach for this flight was not listed.

AIRCRAFT INFORMATION

The accident airplane was a 1973 Piper PA-32-300, serial number 32-7340129. It was a single-engine, low-wing, seven-place airplane with fixed landing gear. A review of the maintenance logbooks indicated the most recent annual inspection was completed on March 17, 2006, at a Hobbs time of 4,552.3 hours and tachometer time of 4,170.45 hours. At the time of the accident the Hobbs meter showed 4,640.0 hours and the tachometer showed 4,242.67 hours.

The airplane was equipped with a 300-horsepower, fuel injected, Lycoming IO-540-K1A5 engine, serial number L-8456-48. The engine was overhauled and reinstalled on the airplane on November 17, 1998, at a total engine time of 5,400.0 hours. The last engine annual inspection was on March 17, 2006, at a total engine time of 5,921.58 hours.

METEOROLOGICAL CONDITIONS

At 1504, the pilot contacted the Green Bay Automated Flight Service Station (AFSS) to obtain a weather briefing and to file a flight plan. The pilot was informed that IFR conditions existed along the entire route and Airmen's Meteorological Information (AIRMET's) existed for moderate turbulence below 12,000 feet and moderate icing between the freezing level and 20,000 feet. The ceilings along the route varied from 400 to 700 feet overcast with visibilities varying from 1 1/2 to 3 miles with rain, drizzle, and fog. The forecast for Lower Michigan was for ceilings from 1,000 to 2,000 feet overcast with layers up to 20,000 feet, visibility varying from 3 to 5 miles, with thunderstorms and rain showers.

Weather conditions recorded at MTC, approximately 14 miles south-southeast of the accident site at 1826 were: Wind variable at 4 knots gusting to 11 knots; visibility 3 statute miles with mist; ceiling 500 feet broken; temperature 7 degrees Celsius; dew point 7 degrees Celsius; altimeter 29.73 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located in wooded area approximately 2.57 miles (2.24 nautical miles) west of D98. The wooded area was located about 300 feet east of a residence. The airplane was traveling from south to north prior to impact as evidenced by the broken tree limbs at the tops of the 60 to 80 foot tall trees. The engine was separated from the airframe and was located approximately 75 feet away from the main wreckage.

The airplane came to rest inverted. All of the aircraft surfaces sustained severe impact damage. The upper portion of the entire fuselage from the rear seats to the instrument panel had been crushed downward with the most severe damage being at the forward cockpit area. Both wings were heavily damaged and remained partially attached to the center fuselage. The aft fuselage/empennage was separated from the cabin area and lodged in a tree located next to the main wreckage. Both the left and right horizontal stabilators remained attached to the empennage. The rudder and vertical stabilizer remained partially attached.

An inspector from the FAA Flight Standards District Office in Detroit, Michigan conducted the wreckage examination after the wreckage was moved into a hangar. The inspector reported that the control cable separations for the rudder, left wing aileron, and stabilator were indicative of overload separations. The right wing aileron cables had been cut by rescue personnel. Although all of the cables were separated, they remained attached to their respective flight control surfaces as well as to the cockpit flight controls.

Examination of the engine revealed the right front section of the engine and the lower oil sump area sustained substantial impact damage. The number one cylinder head was separated and impacted with wood. Both pushrods were separated from the number one cylinder. The crankcase sustained substantial impact damage with pieces of the crankcase broken out. All of the engine driven accessories with the exception of the propeller governor and the engine driven fuel pump were broken off of the engine. The crankshaft and camshaft were inspected through the holes in the crankcase and both were intact. The engine could not be rotated due to the amount of impact damage. Fuel was present in the fuel servo and flow divider. The fuel servo inlet screen and the oil suction screen were clean. Both magnetos were separated from the engine and broken into several pieces. The spark plugs were light gray in color and showed normal operating signatures.

The propeller remained attached to the engine. The propeller spinner was crushed and twisted. All three propeller blades were bent and twisted to varying degrees. Two of the blades were twisted loose in the propeller hub.

The examination of the airplane revealed a handheld Garmin GPS 92 was wired into the aircraft electrical system. A Garmin 530 GPS was mounted into the instrument panel and was identified as "FOR VFR USE ONLY".

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed on January 7, 2007, at the Office of the Medical Examiner, McComb County, Michigan. The final autopsy report listed the cause of death as "Multiple blunt force injuries."

The FAA's Civil Aerospace Medical Institute performed forensic toxicology on specimens from the pilot. All test results were negative.

TESTS AND RESEARCH

The handheld Garmin GPS 92 was removed from the airplane and sent to the Safety Board Vehicle Recorders Laboratory, in Washington D.C., for download. The GPS recorded Date, Time, Latitude, Longitude, Leg Length, Leg Time, and Course. The GPS did not record altitudes. A plot of the GPS data shows the airplane traveled south of the approach course. It then turned left back toward the course. The GPS data then showed that approximately 20 seconds prior to the last recorded position, the airplane entered a 2.6 degree/sec left turn, while accelerating from 99 mph to 119 mph. The last recorded GPS position was approximately 275 yards south of the accident site.

The minimum descent altitude for the VOR/DME approach to D98 was 1,360 feet. The minimum descent altitude at the step-down fix, 2.7 miles from the runway, was 1,960 feet. The elevation at the accident site was approximately 715 feet.

ADDITIONAL INFORMATION

An audio review of the ATC communications with MTC approach revealed that all of the radio communications were loud and clear, and the pilot did not report having any difficulty hearing the controller.

Pilot Information

Certificate:	Private	**Age:**	53,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:**	December 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 1, 2005
Flight Time:	544 hours (Total, all aircraft), 298 hours (Total, this make and model), 498 hours (Pilot In Command, all aircraft), 26 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N888PR
Model/Series:	PA-32-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32-7340129
Landing Gear Type:	Tricycle	**Seats:**	7
Date/Type of Last Inspection:	March 1, 2006 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	87.7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4640 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	IO-540-K1A5
Registered Owner:	Commadore Aviation Ltd	**Rated Power:**	300 Horsepower
Operator:	Michael R. D'Arcy	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	MTC,580 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	18:26 Local	**Direction from Accident Site:**	150°
Lowest Cloud Condition:	Unknown	**Visibility**	3 miles
Lowest Ceiling:	Broken / 500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / 11 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.72 inches Hg	**Temperature/Dew Point:**	7°C / 7°C
Precipitation and Obscuration:	N/A - None - Mist		
Departure Point:	Traverse City, MI (TVC)	**Type of Flight Plan Filed:**	IFR
Destination:	Romeo, MI (D98)	**Type of Clearance:**	IFR
Departure Time:	17:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Serious, 1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Serious, 1 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Eric E Emerson; FAA; Detroit, MI Gregory Erikson; Lycoming; Williamsport, PA
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Note:	
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