



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Kalkaska, Michigan	Accident Number:	CEN09FA083
Date & Time:	December 6, 2008, 15:13 Local	Registration:	N6053B
Aircraft:	Cessna 206H	Aircraft Damage:	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated pilot departed on a cross-country flight from Minnesota to New York. While en route and in visual flight rules conditions above the clouds, the pilot elected to divert to a nearby airport due to adverse weather conditions. The pilot received an instrument-flight-rules clearance, radar vectors, and instrument approach information from air traffic control (ATC). However, he was unable to complete the approach due to trouble receiving the localizer signal for the instrument landing system (ILS) approach. The pilot requested that he be able to continue with only glideslope information and the controller informed the pilot that his current altitude (2,700 feet mean sea level) was the minimum altitude that ATC could authorize. The pilot informed ATC that he was going to descend and ATC reported that radar contact was lost. Over the next approximately 4 minutes, the controller instructed the pilot several times to climb. The pilot did not comply with these requests and radar data indicated that the airplane circled several times about 1.5 miles east of the airport during this time period. After several requests the pilot agreed to climb and accepted vectors for another approach. Transcripts indicated that the pilot was able to successfully tune his navigation equipment for the global-positioning-system approach to the airport. While the airplane was being vectored for another approach the controller instructed the pilot to climb and the pilot responded "I'm off," which was the last transmission received from the accident airplane. Radar data showed that the airplane remained airborne and maneuvered east of the airport for 36 minutes after the last radio transmission from the pilot. Witnesses on the ground reported seeing the airplane circling before it struck trees, the ground, and a residence. The last radar contact was within 0.1 miles of the accident location. Review of the pilot's flight records showed that he had accumulated about 8 hours of actual instrument flight time since he received an instrument rating about 10 months prior to the accident; however, the records do not indicate that the pilot had met the recent flight experience required by regulations to act as pilot in command in instrument flight conditions. The autopsy on the pilot revealed evidence of multiple previous and one very recent, possibly ongoing, heart attack. There were no indications that the pilot had been symptomatic with or was aware of his heart disease. The circumstances of the

accident do not suggest incapacitation, and the pilot did not indicate any symptoms in discussions with air traffic controllers. It could not be determined whether distraction or impairment due to the pilot's heart disease may have played a role in this 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 clearance from trees and terrain during the instrument-flight-rules flight. Contributing to the accident was the pilot's failure to comply with instrument flight procedures and his lack of recent instrument flight experience.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Approach control procedure - Compliance w/ procedure
Aircraft	Altitude - Not attained/maintained
Personnel issues	Recent instrument experience - Pilot

Factual Information

History of Flight

Maneuvering	Controlled flight into terr/obj (CFIT) (Defining event)
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HISTORY OF FLIGHT

On December 6, 2008, about 1513 eastern standard time (all times est unless noted), a Cessna 206H, N6053B, piloted by a private pilot, was destroyed when it impacted trees, a mobile home, and terrain near Traverse City, Michigan. The Title 14 Code of Federal Regulations Part 91 personal flight was operating in instrument meteorological conditions (IMC) and was on an instrument flight rules (IFR) flight plan. The pilot, who was the sole occupant of the airplane was fatally injured. The airplane departed from the Wipline Seaplane Base (09Y) near Inver Grove Heights, Minnesota at 1115. The intended destination was the Floyd Bennett Memorial Airport (GFL), Glens Falls, New York.

Radar track data and air traffic control (ATC) communication transcripts were obtained for the accident flight. This data showed that the airplane departed from 09Y at 1115. The airplane proceeded about 25 nautical miles northeast before turning to an east bound heading. The airplane remained on an easterly heading until 1357 when a left turn to a westerly heading was executed. This turn corresponded with a radio transmission from the pilot which indicated his intention to "turn around and head back" due to adverse weather encountered. Up to this time the airplane had been operated in visual meteorological conditions above the clouds (VFR on top).

At 1359, the pilot reported that he was accumulating ice and elected to divert to TVC. ATC data indicated that the pilot was given an IFR clearance and vectors for the ILS runway 28 approach to TVC. The pilot stated that he did not have approach information and ATC relayed the approach frequencies to the pilot. During the approach, the pilot informed ATC that he was having difficulty receiving the localizer portion of the approach. The pilot confirmed the approach frequencies and stated that he was receiving glide slope information but was still not receiving the localizer. During this approach the pilot stated that he was navigating to the outer marker using his global positioning system (GPS) receiver. The airplane continued toward TVC and the ATC controller confirmed that the ILS runway 28 approach had been in use all morning with no reported difficulties. At 1424, the pilot inquired with ATC if he could follow the glide slope (at this time the pilot was still not receiving the localizer). The controller informed the pilot that his current altitude (2,700 feet msl) was the minimum altitude that ATC could authorize. At 1427, the pilot informed ATC that he was going to descend and ATC reported that radar contact was lost. Over the next approximately 4 minutes, the controller instructed the pilot several times to climb. The pilot refused to comply with these requests and radar data indicated that the airplane circled several times about 1.5 miles east of the airport during this time period. The airplane's altitude at this time was about 1,300 feet.

At 1431, the pilot agreed to climb and accepted vectors for another approach. At 1433, the controller asked the pilot if he was able to accept the TVC runway 28 GPS approach. The pilot later told the controller, "I appear to have the g p s in there if you want to try it I'd love to try it." The pilot continued accepting radar vectors until 1436:47, when the controller instructed the pilot to climb to 3,500 feet msl. At 1437:06, the pilot responded "I'm off" which was the last transmission received from the accident airplane. Radar data showed that the airplane remained airborne and maneuvered east of TVC for 36 minutes after the last radio transmission from the pilot. The last radar contact occurred at 1513:27 and the recorded position was within 0.1 miles of the accident location.

Witnesses on the ground reported that the airplane circled at a low altitude in the vicinity of the accident site. The two witnesses reported seeing the airplane's wing dip and then it struck trees. The airplane subsequently struck the residence where the witnesses had been shoveling snow.

PERSONNEL INFORMATION

The pilot, age 47, held a private pilot certificate with single engine land, single engine sea, and instrument airplane ratings. His most recent third class medical certificate was issued on August 26, 2006. The medical certificate listed the limitation that the pilot "Must have available glasses for near vision."

An entry in the pilot's flight logbook indicated that as of September 19, 2008, he had accumulated 1,801.8 total flight hours, 906.8 hours in Cessna 206H airplanes, 307.9 hours in amphibious airplanes, and 51.5 hours of instrument flight time. The entry did not indicate if the instrument flight hours were in actual IMC or simulated conditions.

The pilot received his instrument airplane rating on February 14, 2008. Log entries subsequent to this date indicate that the pilot had accumulated 8.1 hours of instrument flight time in actual IMC since receiving his instrument airplane rating. No entries were found for instrument flights within the preceding 6 months. No entry was found indicating that the pilot had received an instrument proficiency check within the 6 months prior to the accident.

AIRCRAFT INFORMATION

The airplane was a Cessna 206H, serial number 20608272. It was a single engine, high wing, monoplane. The airplane was powered by a Lycoming IO-540-AC1A5 reciprocating engine, serial number L-31373-48E. The engine was rated to produce 300 horsepower. According to aircraft records, the following additional equipment was installed:

Knots 2U aileron and flap gap seals, were installed November 13, 2006, in accordance with Supplemental Type Certificate (STC) number SA2382NM;

A Flint Aero auxiliary fuel tank kit was installed November 13, 2006, in accordance with STC number SA4366WE;

Wipline model 3405A amphibious floats were installed December 15, 2006, in accordance with Supplemental Type Certificate number SA01185CH.

A review of maintenance records showed that the airframe and engine had undergone an annual inspection on October 10, 2008. The total hours of operation of the airframe and engine were both 752.8 hours as of the annual inspection.

The airplane was equipped with the Garmin G1000 integrated avionics suite. The navigation capabilities of the G1000 system included en route and approach certified GPS navigation and VHF navigation. The avionics system included a database which, among other information, included airport information, navaid information, airspace information and instrument approach, departure and fix information.

METEOROLOGICAL INFORMATION

At 1439, the recorded weather conditions at TVC were: Wind 290 degrees at 8 knots; visibility 1 sm; light snow; few clouds at 500 feet, overcast clouds at 1,100 feet; temperature -4 degrees C; dew point -5 degrees C; altimeter setting 29.57 in-hg.

At 1447, the recorded weather conditions at TVC were: Wind 300 degrees at 10 knots; visibility 3/4 sm; light snow; few clouds at 500 feet, overcast clouds at 1,100 feet; temperature -3 degrees C; dew point -4 degrees C; altimeter setting 29.57 in-hg.

At 1453, the recorded weather conditions at TVC were: Wind 310 degrees at 11 knots; visibility 3/4 sm; light snow; few clouds at 500 feet, overcast clouds at 1,100 feet; temperature -3 degrees C; dew point -4 degrees C; altimeter setting 29.58 in-hg.

At 1512, the recorded weather conditions at TVC were: Wind 340 degrees at 17 knots gusting to 24 knots; visibility 1/2 sm; snow and blowing snow; vertical visibility 500 feet; temperature -3 degrees C; dew point -5 degrees C; altimeter setting 29.59 in-hg.

COMMUNICATIONS

On December 5, 2008, at 1856, a caller contacted the Princeton Automated Flight Service Station (FCF/AFSS) and obtained a weather briefing for a visual flight rules (VFR) flight from the South St. Paul Municipal Airport, South St. Paul, Minnesota (SGS) to GFL.

On December 6, 2008, at 0639, a caller contacted the FCF/AFSS and obtained a weather briefing for a flight from SGS to GFL. The briefer informed the caller that there were portions of the route of flight where VFR operations were not recommended. Additionally, the briefer informed the caller about Airman's Meteorological Information reports (AIRMET) for icing conditions and IFR conditions along the route of flight.

At 0943, a caller contacted the FCF/AFSS and obtained updated weather information. The caller specifically asked about cloud tops. The briefer informed the caller that the cloud tops in

Wisconsin and northern lower Michigan were forecast to be about 18,000 feet.

At 0954, a caller contacted the FCF/AFSS and obtained a weather briefing and filed an IFR flight plan for a flight from SGS to GFL. During the brief, the briefer informed the caller of AIRMET's for occasional IFR conditions and icing conditions below 12,000 feet from eastern Minnesota through lower Michigan.

During the flight, the pilot was in radio communication with several ATC facilities along the route of flight. During the approach to TVC, the pilot was in communication with the Minneapolis Air Route Traffic Control Center (ARTCC), sector 02 radar controller.

The full transcripts of communications are included in the docket material associated with this report.

AIRPORT INFORMATION

TVC was a publicly owned airport located about 2 miles south of Traverse City, Michigan. The airport was open to the public and had an operating control tower. The airport had 2 intersecting runways, 10/28 and 18/36. At the time of the accident, runway 28 was in use. Runway 28 was 6,500 feet long and 150 feet wide.

The airport had 5 instrument approach procedures at the time of the accident. The instrument approach in use at the time of the accident was the ILS RWY 28 approach. There were no reported failures of the ILS system on the day of the accident. According to information provided by the Flight Inspection Operations Group of the FAA, the ILS Runway 28 approach at TVC was flight checked on October 30, 2008 and again on June 16, 2009. In both instances, all functions of the approach including the localizer were found to operate satisfactorily. No failures of the system were reported during this time period.

The ILS Runway 28 approach listed a decision height of 817 feet above mean sea level (MSL) (200 feet above ground level), and a minimum visibility requirement of 1/2 statute mile.

The NDB or GPS Runway 28 approach listed a minimum descent altitude of 1,400 feet MSL (783 feet AGL), with a minimum visibility requirement of 3/4 statute mile.

The RNAV (GPS) RWY 10 approach listed a circling minimum descent altitude of 2,000 feet MSL (1,376 feet AGL), with a minimum visibility requirement of 1-1/4 statute mile for category A airplanes.

The GPS RWY 36 approach listed a circling minimum descent altitude of 1,180 feet MSL (556 feet AGL), with a minimum visibility requirement of 1 statute mile for category A airplanes.

The VOR or TACAN or GPS-A approach listed a minimum descent altitude of 1,300 feet MSL (676 feet AGL), with a minimum visibility requirement of 1 statute mile for category A airplanes.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was examined by a FAA inspector and a representative of the airplane manufacturer. The airplane impacted trees, a mobile home residence, and the ground before coming to rest. All primary flight and control surfaces were identified in the vicinity of the main wreckage. The main portion of the airplane came to rest in an inverted position next to a tree adjacent to the mobile home. The aft fuselage structure was separated from the forward fuselage structure and was wrapped around the tree. The aft fuselage remained connected to the forward fuselage only by control cables. The vertical stabilizer, rudder, horizontal stabilizer, elevator, and ventral fin remained attached to the aft fuselage. The left wing was separated from the fuselage and had damage to the leading edge. The outboard section of the left wing was separated from the inboard portion. The outboard portion still had the aileron attached. The left wing tip showed evidence of tree impact. The right wing remained attached to the fuselage at the strut attachment. The wing was separated at the wing attach fittings. The right aileron was separated from the wing. The right wing tip and right landing float were found within the mobile home that was impacted. The instrument panel and rudder pedals were displaced aft and to the left reducing cabin volume. Both forward door posts were fractured. The pilot's AmSafe Seatbelt Airbag had deployed. The engine was displaced aft and was partially within the cabin section of the fuselage. The propeller was found separated from the engine. The two main fuel tanks and the two auxiliary tip fuel tanks were breached. Fuel was found in the fuel selector valve and fuel strainer. The fuel selector was found in the "Both" position.

Examination of the control system revealed continuity except for cable separations at the wings. All of the cable separations exhibited signatures consistent with tension overload. Measurement of elevator trim and flap actuators were consistent with 5 degrees elevator tab up and 0 degrees of flap extension.

First responders to the accident scene reported that spilled fuel was present at the accident site when they arrived.

Examination of the airplane's avionics system was not accomplished due to damage received during the impact.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by Spectrum Health, Grand Rapids, Michigan, on December 8, 2008. The report listed the cause of death as "Multiple blunt injuries" and the manner of death as "Accident".

The autopsy report on the pilot noted "Arteriosclerotic cardiovascular disease" with "severe narrowing of the left anterior descending coronary artery," "old infarcts of the apical left ventricle, the anterior and lateral walls of the left ventricle and of the interventricular septum at the base," and a "focal acute infarct of the lateral wall of the left ventricle." Microscopic examination indicated an "organized intraluminal thrombus" in the left anterior descending coronary artery. There were no indications on the autopsy report of any coronary artery stents,

coronary bypass surgery, or neurologic abnormalities.

The pilot's applications for airman medical certificate all noted "No" to "Heart or vascular trouble."

A Final Forensic Toxicology Fatal Accident Report prepared by the FAA was negative for all tests performed.

TESTS AND RESEARCH

The TVC NDB or GPS Runway 28 instrument approach procedure listed minimum weather conditions required for the procedure as an 800 foot ceiling and 3/4 statute mile of visibility. A "ceiling" is defined as the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken", "overcast", or "obscuration". The reported weather conditions at 1439, 1447, and 1453 all listed ceilings and visibilities at or above the prescribed minimums. These weather reports occurred during the 36 minute time period when the pilot was not in communication with ATC and the airplane was maneuvering east of TVC.

Federal Aviation Administration regulations pertaining to operating an airplane as pilot in command in instrument flight conditions state that the pilot must have completed an instrument proficiency check within the previous 6 calendar months, or have accumulated instrument flight experience in the previous 6 calendar months that included six instrument approaches, holding procedures and tasks, and intercepting and tracking courses through the use of navigational electronic systems.

Pilot Information

Certificate:	Private	Age:	47, Male
Airplane Rating(s):	Single-engine land; Single-engine sea	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	Last FAA Medical Exam:	August 29, 2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	February 14, 2008
Flight Time:	1802 hours (Total, all aircraft), 907 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N6053B
Model/Series:	206H	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	20608272
Landing Gear Type:	Amphibian	Seats:	6
Date/Type of Last Inspection:	October 10, 2008 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	753 Hrs as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Installed	Engine Model/Series:	IO-540-AC1A5
Registered Owner:	On file	Rated Power:	300 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Day
Observation Facility, Elevation:	TVC, 624 ft msl	Distance from Accident Site:	20 Nautical Miles
Observation Time:	15:27 Local	Direction from Accident Site:	100°
Lowest Cloud Condition:		Visibility	0 miles
Lowest Ceiling:	Indefinite (V V) / 500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	16 knots / 26 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.6 inches Hg	Temperature/Dew Point:	-3°C / -5°C
Precipitation and Obscuration:			
Departure Point:	South St Paul, MN (SGS)	Type of Flight Plan Filed:	IFR
Destination:	Glens Falls, NY (GFL)	Type of Clearance:	IFR
Departure Time:	11:15 Local	Type of Airspace:	

Airport Information

Airport:	Cherry Capital Airport TVC	Runway Surface Type:	
Airport Elevation:	624 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	Unknown
Runway Length/Width:		VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	44.645278,-85.175003

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	William Naymick; FAA-GRR-FSDO; Grand Rapids, MI Ricardo J Assensio; Cessna Aircraft Company; Wichita, KS
Original Publish Date:	August 12, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=69545

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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](#).