



National Transportation Safety Board Aviation Accident Final Report

Location:	Holland, MI	Accident Number:	CEN10FA101
Date & Time:	01/17/2010, 1004 EST	Registration:	N8405E
Aircraft:	CESSNA 172	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot rented the airplane for most of the day to give rides to friends and had fueled it to capacity. He told a lineman that he planned to takeoff and, if necessary, would file an instrument-flight-rules flight plan and return to the airport. Witnesses saw the airplane take off and disappear into the overcast. Shortly thereafter, they heard an airplane make four passes over the airport. The sound became progressively louder but they could not see the airplane. On the fifth pass, the airplane was seen approximately 50 feet above the ground and it barely cleared a stand of trees. Recorded ATC transcripts revealed that the pilot contacted approach control and told the controller that he was caught in heavy fog and wanted vectors back to the airport. The airplane crashed shortly thereafter in a snow-covered field.

An examination of the airplane showed impact damage consistent with having descended to the ground in an uncontrolled spin. An examination of the airplane's systems showed no anomalies.

Although the pilot was instrument rated, he had not flown with instruments since receiving his rating 2 years ago. He had logged 1.8 hours in actual instrument meteorological conditions, 50.8 in simulated IMC, and 6.7 hours in a flight simulator. Ceiling and visibility at the time of the accident was below landing minimums and was recorded as 200 feet overcast and 3/4-mile in mist. The RNAV (GPS) RWY 8 approach chart was found on the pilot's lap. Although the airplane was IFR certified, it was not RNAV or GPS equipped. Toxicology results indicated the presence of propoxyphene, a prescription narcotic medication. The concentration present was consistent with use at a time outside of 24 hours prior to the accident and would not have caused impairment. Cellular telephone records showed that the pilot had engaged in calls and text message conversations with the passenger the night before the accident. Starting at 6:00 P.M. the night before the accident, the pilot received or made calls or text messages every hour, through midnight, until 3:12 A.M. In one conversation, the passenger told the pilot that he would be in good flying shape for the next day, and the pilot replied that he needed to get 4 hours of rest before he flew. The final outgoing call to the passenger was placed at 7:59 A.M. on the day of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to take off in known instrument meteorological conditions without instrument currency or recent instrument experience, which led to spatial disorientation resulting in an inadvertent spin. Contributing to the accident was the pilot's lack of adequate rest prior to the flight.

Findings

Personnel issues	Incorrect action performance - Pilot (Cause) Use of medication/drugs - Pilot Recent instrument experience - Pilot (Cause) Lack of sleep - Pilot (Factor)
Environmental issues	Low ceiling - Contributed to outcome Low visibility - Contributed to outcome

Factual Information

HISTORY OF FLIGHT

On January 17, 2010, at 1004 eastern daylight time, a Cessna 172N, N8405E, registered to and operated by Tulip Air Service and piloted by a commercial pilot, was destroyed when it impacted snow-covered terrain following a loss of control while maneuvering near Holland, Michigan. Instrument meteorological conditions (IMC) prevailed at the time of the accident. The personal flight was being conducted under the provisions of 14 Code of Federal Regulations (CFR) Part 91, and no flight plan had been filed. The pilot and passenger on board the airplane were fatally injured. The local flight originated from the Tulip City Airport, Holland, Michigan, approximately 0945.

According to the operator, the pilot had rented the airplane for most of the day to give rides to his friends. He and his first passenger arrived at the airport approximately 0800. After checking his file, the front office worker gave the pilot the airplane's keys. Due to the poor weather conditions, the pilot postponed the flight. While he gave his passenger a tour of the facilities, he had the airplane fueled to capacity. As the lineman fueled the airplane, the pilot told him that he planned to take off and, if necessary, he would file an IFR flight plan with Muskegon Approach Control and return to the airport. He then preflighted the airplane.

Approximately 0945, the lineman and the front office worker saw the airplane take off on runway 08 and disappear into the overcast. The front office worker said he was "very concerned" that they took off without filing an instrument flight plan or receiving an instrument clearance. Shortly thereafter, the lineman heard an airplane make five passes over the airport. The first two passes were in a north-south direction and the sound got progressively louder, but he could not see the airplane. On the third pass, he could not determine the direction of flight. The fourth pass was in an east-west direction and he still could not see the airplane. On the fifth pass, he saw the airplane flying from east to west approximately 50 feet above the ground and it "barely cleared the trees." He then heard the pilot call Muskegon Approach Control.

According to the transcript of radio communications, the pilot contacted Muskegon Approach Control at 1000:22 and told the controller that he was "caught in some fog" and wanted "vectors to runway 8 for Tulip City." When the controller asked the pilot if he was IFR, the pilot replied that he wanted to "file a quick IFR into Tulip City." Believing the pilot was on the ground there followed a discussion on what frequencies to contact FSS. At 1003:43, when the controller asked the pilot if he wanted to file a flight plan, the pilot replied, "Caught in some heavy fog and would just like vectors to Tulip City Airport." Asked if he was VFR, the pilot replied that he "was VFR, and now have to go in for an emergency." The controller assigned him a transponder code of 0-4-3-0, but the pilot never acknowledged, and there were no further communications. The last radar contact position for the airplane placed it 4 miles south of Tulip City at 1,500 feet agl (above ground level). Shortly thereafter, and ELT (emergency locator transmitter) beacon was detected. Authorities were notified and the wreckage was located approximately 1130.

PERSONNEL (CREW) INFORMATION

The pilot was a 23-year-old foreign exchange student from Nairobi, Kenya, and was a sophomore at nearby Hope College in Holland. He held a U. S. commercial pilot certificate,

dated November 13, 2007. In addition to his airplane single engine land rating, he also held an airplane multi engine land rating, dated December 6, 2007, and an instrument airplane rating, dated August 23, 2007. His second class airman medical, dated October 24, 2006, contained no restrictions or limitations.

His logbook contained entries from October 26, 2006, to December 22, 2009. As of the last entry in the logbook, the pilot had accumulated the following flight times (in hours):

Total time: 321.5

Single engine: 306.1

Multi engine: 15.3

Pilot-in-command: 273.1

Dual instruction: 151.1

Solo: 97.3

Cross-country: 135.1

Actual instrument: 1.8

Simulated instrument: 50.8

Night: 16.7

The pilot's flight time was accrued in the following airplane types (in hours):

Cessna 172: 189.4

Cessna 172RG: 24.9

Cessna 152: 83.9

Cessna 152TW: 7.2

Cessna 205: 1.2

Cessna 550: 8.0

Beech A36: 1.5

Piper PA-20: 1.7

Piper PA-23: 7.3

ATC610 Simulator: 6.7

The last entry in his logbook was dated December 22, 2009, when he took his flight review. It was for one hour and was done in the accident airplane. The last time he logged an instrument flight was on April 8, 2008. It was for 1.0 hours and was done in actual IMC.

The passenger was a 20-year old junior and political science major at Hope College.

AIRCRAFT INFORMATION

The airplane, a Cessna Aircraft Corporation model 172N, serial number 17272195, was manufactured in 1979. It was equipped with a Lycoming O-320-H2AD engine (serial number

RL-3557-76T), rated at 160 horsepower, driving a McCauley all-metal 2 bladed, fixed-pitch propeller (model number 1C160/DTM7557), serial number 235928).

According to the maintenance records, the last annual inspection of the airframe and engine was done on November 6, 2009, at a tachometer time of 805.7 hours. At that time, the airframe and engine had accumulated 7,337.4 total hours. The engine was last overhauled on December 8, 2008, at a tachometer time of 471.7 hours. At the time of the last inspection, the engine had accrued 334 hours since major overhaul. The ELT battery was replaced on January 26, 2009. The altimeter, encoder, and pitot-static system were certified for IFR on March 31, 2008.

METEOROLOGICAL INFORMATION

The following Automated Surface Observing Station (ASOS) observations were recorded at Tulip City Airport (KBIV) approximately the time of takeoff and the time of the accident:

Takeoff: Wind calm; visibility 1/2 statute mile, freezing fog; ceiling 200 feet overcast; temperature -3 degrees Centigrade (C); dew point -5 degrees C; altimeter 29.89 inches of Mercury.

Accident: Wind calm; visibility 3/4 statute mile, mist; ceiling 200 feet overcast; temperature -3 degrees C; dew point - 4 degrees C; altimeter 29.89 inches of Mercury.

Weather conditions remained below VMC and landing minimums for the various instrument approach procedures available from early morning to early afternoon (see "Weather Reports and Records," EXHIBITS).

AIDS TO NAVIGATION

There were no known difficulties with navigational aids.

COMMUNICATIONS

There were no communications difficulties.

AERODROME INFORMATION

Tulip City Airport (KBIV), situated at an elevation of 687 feet msl, is located 2 miles south of Holland, Michigan at N42-44.59 and W086-06.30. An ASOS is located on the field, and Tulip City Air Service, Incorporated, the sole fixed base operator, offers computerized weather services. The nearest Flight Service Station is in Lansing, Michigan, and Muskegon Approach Control handles all IFR arrivals and departures.

The airport has a rotating beacon and is served by a single runway, 08-26 (6,001 feet by 100 feet, asphalt). There are four published instrument approaches to the airport. The runway is equipped with high intensity runway lights (HIRL), and both runway ends have runway end identification lights (REIL). Only runway 26 is equipped with a medium intensity approach lighting system (MALSR) with runway alignment indicator lights.

According to Tulip City Airport officials, all landing approach aids and lights were functioning at the time of the accident.

WRECKAGE AND IMPACT INFORMATION

The on-scene investigation was conducted on January 18, 2010. The accident site was located in a corn and soybean field, located one mile northwest of the intersection formed by 58th

Street and 136th Avenue in Manlius Township, and about 4 miles south of the Tulip City Airport. The geographic coordinates were N42-40.541 and W086-07.536, and the accident site elevation was 745 feet msl.

Ground scars were consistent with the airplane impacting the ground in a right wing down, nose low attitude. The initial impact point contained red lens fragments, identified as being the right position light. The first scar led to a large ground depression. The wreckage path curved slightly to the right on an average magnetic heading of 250 degrees, and was 225 feet in length. Strewn along the path were the propeller, the nose and right main landing gear, engine oil filter, firewall fuel strainer bowl, and various wing, fuselage and engine cowling fragments.

All major airframe components were located and identified. Both wings were torn off and the fuel tanks were compromised. The distorted primary flight control surfaces remained attached to the structure. Flight control continuity was established. Flap position was not determined although the control handle was in the UP position. The elevator trim jackscrew measures 1.5-inches extension which, according to the airframe manufacturer equated to a 10-degree tab UP setting. The altimeter was set to 29.98 inches of Mercury, but the needles were missing. The transponder code was set to 1200. The vertical speed indicator showed a 1,850 feet-per-minute climb, and the tachometer indication was just below 3,000 RPM. The hour recorder read 846.8. The Hobbs meter was not located. The throttle, mixture control, and carburetor heat controls were full forward, and the magneto switch was on.

The left cabin door and baggage door remained partially attached to the bent structure. Only the right cabin door separated from the airplane. The front seats and seat rails were broken out and fragmented. According to rescue personnel, both occupants were wearing their seat belts and shoulder harnesses. The restraint systems, with exception of the pilot's shoulder harness, had been cut by rescue personnel to extract the occupants.

Power train drive continuity was established at the scene. The crankshaft was hand rotated and thumb compression was obtained on all cylinders. The fuel strainer screen was screen. The propeller was broken off torsionally at the mounting flange. The cambered surfaces were polished and the blades were bent in an S-shape.

First responders reported observing no ice on the airframe when they arrived on scene.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the pilot and passenger by the Sparrow Forensic Pathology Laboratory in Lansing, Michigan. Both deaths were attributed to multiple blunt force injuries.

Toxicology screens were performed by Sparrow and FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. According to the CAMI report, no cyanide, carbon monoxide, or ethanol were detected in either the pilot or passenger. Norpropoxyphene (0.101 ug/ml, ug) was detected in the pilot's urine.

TESTS AND RESEARCH

The handling of the accident airplane by air traffic control prompted a special investigation by the National Transportation Safety Board's (NTSB) Operational Factors Division (AS-30). Their report is attached as an exhibit to this report.

Radar data was examined by the NTSB AS-30. They reported that although two radar "hits" were made by an unidentified airplane, the data was inconclusive and revealed nothing of

significance.

During the on-scene investigation, a cellular telephone was heard ringing from within the wreckage. It was located and sent to the service provider, Verizon Incorporated. They reported that the telephone had not been in use at the time of the accident. An examination of the call records indicated that the pilot had sent text messages to the passenger the night before the accident. Starting at 6:00 P.M., the night prior, the pilot received or made calls or sent text messages, every hour, through midnight, until 3:12 A.M. on the day of the accident. In his communications, the pilot told the passenger about some friends that were going out that evening. The passenger responded back, expressing concern that the pilot be in good flying shape for the next day. The pilot replied that he needed to get four hours of rest before he flew, otherwise he'd be grumpy. The passenger said she wouldn't want that. The final outgoing call was placed by the pilot to the passenger, on the day of the accident, at 7:59 A.M.

ADDITIONAL INFORMATION

Federal Aviation Administration (FAA) inspectors from the Grand Rapids, Michigan, Flight Standards District Office (FSDO) arrived at the scene on the afternoon following the accident. They reported finding a KBIV RNAV (GPS) RWY 8 approach chart on the pilot's lap. The airplane was not RNAV (area navigation) or GPS (Global Positioning System) equipped and only had VOR/ILS (Very high Frequency Omnidirectional Radio Range/Instrument landing system) and ADF (automatic Direction Finder) equipment installed. Also on the pilot's lap was a sheet of paper containing the notations 126.25, 123.05, 128.5, and 310.

According to the FAA inspectors, when the pilot took his flight review on December 22, 2009, he told the instructor that he was not current. The FAA inspectors also determined that at the time of the accident, the pilot was not instrument current as required by Title 14 CFR Part 61.57, and had not been current for the previous two years.

History of Flight

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

Pilot Information

Certificate:	Commercial	Age:	23, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without Waivers/Limitations	Last FAA Medical Exam:	10/26/2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	12/22/2009
Flight Time:	322 hours (Total, all aircraft), 189 hours (Total, this make and model), 273 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N8405E
Model/Series:	172 N	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal; Utility	Serial Number:	17272195
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	11/06/2009, Annual	Certified Max Gross Wt.:	2300 lbs
Time Since Last Inspection:	41 Hours	Engines:	1 Reciprocating
Airframe Total Time:	7379 Hours at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-320-H2AD
Registered Owner:	Tulip City Air Service	Rated Power:	160 hp
Operator:	Tulip City Air Service	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	BIV, 687 ft msl	Distance from Accident Site:	5 Nautical Miles
Observation Time:	1004 EST	Direction from Accident Site:	270°
Lowest Cloud Condition:		Visibility	1 Miles
Lowest Ceiling:	Overcast / 200 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.89 inches Hg	Temperature/Dew Point:	-3° C / -4° C
Precipitation and Obscuration:			
Departure Point:	Tulip City, MI (BIV)	Type of Flight Plan Filed:	None
Destination:	Tulip City, MI (BIV)	Type of Clearance:	None
Departure Time:	0945 EST	Type of Airspace:	Class G

Airport Information

Airport:	Tulip City (BIV)	Runway Surface Type:	
Airport Elevation:	687 ft	Runway Surface Condition:	
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	42.675556, -86.125556

Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	Report Date:	01/07/2011
Additional Participating Persons:	Steve D Betzer; FAA Flight Standards District Office; Grand Rapids, MI Thomas G Kozura; FAA Flight Standards District Office; Grand Rapids, MI		
Publish Date:	01/07/2011		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=75286		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).