



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Reeds Spring, MO	<b>Accident Number:</b>	CEN18FA054
<b>Date &amp; Time:</b>	12/17/2017, 1830 CST	<b>Registration:</b>	N6433J
<b>Aircraft:</b>	PIPER PA28	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	VFR encounter with IMC	<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The noninstrument-rated private pilot and the passenger, who held a student pilot certificate, departed on a night cross-country flight. The pilot was not in communication with air traffic control during the accident flight; however, a review of radar information revealed a flight track that correlated with the accident flight. The airplane approached its destination from the north/northwest, making several turns, including circles, along its route of flight, before the target disappeared from radar near the accident location.

Witnesses near the accident site stated that the visibility was poor and that it was foggy at the time of the accident. A review of weather conditions revealed instrument meteorological conditions at the accident site, and at the destination airport. A further review of weather conditions for the time the flight originated from its departure airport, and an hour before departure time, revealed similar instrument weather conditions near the accident site and destination airport. There was no record that the pilot received a preflight weather briefing for the planned flight.

Although examination of the airplane was limited by impact damage, no pre-impact abnormalities were noted with the airframe or engine.

The accident is consistent with the noninstrument-rated pilot's flight into known instrument meteorological conditions and subsequent collision with terrain.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The noninstrument-rated pilot's inadequate pre-flight planning and in-flight decision-making, which resulted in flight into known instrument meteorological conditions and the subsequent collision with terrain.

## Findings

### Personnel issues

Weather planning - Pilot (Cause)  
Decision making/judgment - Pilot (Cause)  
Qualification/certification - Pilot

### Environmental issues

Below VFR minima - Effect on personnel (Cause)  
Below VFR minima - Decision related to condition (Cause)

## Factual Information

### History of Flight

Prior to flight	Preflight or dispatch event
Enroute-cruise	VFR encounter with IMC (Defining event)
Enroute	Collision with terr/obj (non-CFIT)

On December 17, 2017, about 1830 central standard time, a Piper PA-28-180 airplane, N6433J, impacted terrain near Reeds Spring, Missouri. The pilot and passenger were fatally injured, and the airplane was destroyed. The airplane was registered to and operated by a private individual, as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Night instrument meteorological conditions prevailed near the accident site about the time of the accident, and no flight plan was filed. The cross-country flight departed Gardner Municipal Airport (K34), Gardner, Kansas, about 1700, and was en route to M. Graham Clark Downtown Airport (PLK), Branson, Missouri.

The pilot was not in communication with air traffic control during the accident flight; however, review of radar information revealed a flight track that correlated with the time and location of accident airplane. The airplane approached the Branson area from the north/northwest, making several turns including circles, before the target disappeared from radar near the accident site. While en route, the flight reached a maximum altitude of 2,750 ft mean sea level (msl); however, the flight's average altitude was about 2,500 ft msl. The last several radar returns showed the airplane at an altitude of 2,250 ft msl, 2,125 ft msl, and 2,200 ft msl, with the last radar return at 2,050 ft msl, in altitude, and just east of the accident site. The terrain elevation in the immediate area of the accident site, was about 1,300-1,400 ft. msl.

Several witnesses reported hearing the airplane overhead or circling before the engine went quiet, followed by the sound of a crash. First responders were notified and responded to the accident site. Both the witnesses and first responders reported the weather about the time of the accident was foggy with poor visibility.

### PERSONNEL INFORMATION

The pilot held a private pilot certificate with rating for airplane single-engine land. A review of Federal Aviation Administration (FAA) records did not find any information that the pilot held an instrument rating. His most recent third-class FAA medical certificate was issued on February 17, 2017, with the limitation: "shall possess glasses for near/intermediate vision." At the time of the exam, the pilot reported 0 total flight hours and 0 hours in the previous six months. The pilot's logbook was not available for review; however, family members estimated that the pilot had accumulated about 100 total hours of flight time.

The passenger held a student pilot certificate. Her third-class FAA medical certificate was issued on March 16, 2017, with a limitation for corrective lenses.

#### AIRCRAFT INFORMATION

The accident airplane was a Piper PA-28-180, which is a low-wing, all metal, single-engine airplane with fixed landing gear, powered by a 180-horsepower Lycoming four-cylinder engine, and a fixed-pitch propeller. A review of the airplane's maintenance records revealed the last annual inspection was completed on June 5, 2017, at an airplane tachometer time of 4,550.9 hours and 231.8 hours since engine overhaul. A previous annual inspection, dated September 22, 2012, listed a tachometer time of 4,538.42 hours and a time since engine overhaul of 219.37 hours. A review of FAA records showed that the pilot purchased the airplane on June 10, 2017.

#### METEOROLOGICAL INFORMATION

At 1835, the Branson West Municipal Airport – Emerson Field (FWB), Branson, Missouri, automated weather observation station (AWOS), located about 1.5 miles south of the accident site, recorded calm wind, 1/2-mile visibility, 400-ft overcast ceiling, temperature 46°F, dew point 46°F, and an altimeter setting of 30.08 inches of mercury.

At 1845, the Branson Airport (BBG), Branson, Missouri, AWOS, located about 14.7 miles southeast of the accident site, recorded calm wind, 1 3/4-miles visibility with mist, 200-ft overcast ceiling, temperature 45°F, dew point 45°F, and an altimeter setting of 30.08 inches of mercury.

At 1655 (about the time the flight departed from K34), the FWB AWOS recorded calm wind, 1/2-mile visibility and fog, and a 400 ft overcast ceiling. At 1645, the BBG AWOS recorded calm wind, 3/4-mile visibility in mist, and a 200-ft overcast ceiling.

At 1555, (about an hour before departure from K34) the FWB AWOS recorded calm wind, 3/4-mile visibility in mist, and a 300-ft overcast ceiling. At 1545, BBG AWOS recorded calm wind, 3/4-mile visibility in mist, and a 300-ft overcast ceiling.

The National Weather Service Springfield, Missouri Weather Forecast Office is responsible for the Branson area, but does not issue a Terminal Aerodrome Forecast (TAF) for PLK. The closest TAF to the accident site was issued for BBG.

A terminal aerodrome forecast (TAF) for BBG was issued before the pilot's departure at 1700 and called for light instrument flight rules (LIFR) conditions to prevail with variable wind at 5 knots, 3 miles visibility in mist, and an overcast ceiling at 400 ft above ground level (agl). The two subsequent amendments and the next scheduled TAF also called for LIFR conditions, with visibility deteriorating to 3/4 mile and an overcast ceiling at 300 ft agl.

The NTSB Meteorology Weather Study Report is in the docket for this accident.

There was no record of the pilot obtaining weather briefing.

## AIRPORT INFORMATION

PLK is a non-towered, public airport located 1 mile south of Branson, Missouri. The airport has a single asphalt runway oriented 12/30, which is 3,738 ft long by 100 ft wide. Runways 12 and 30 are equipped with RNAV (GPS) instrument approaches.

There are several public airports in the Branson area, including BBG located 6 miles south of PLK, and has an operating control tower and instrument approaches.

FWB is non-towered airport, located 2 miles west of Branson West, Missouri. FWB has RNAV (GPS) instrument approaches to runway 03 and 12

## WRECKAGE AND IMPACT INFORMATION

The accident site was located in an open field in a rural neighborhood, about 1.5 miles north of FWB and about 11 miles northwest of PLK.

The on-scene examination of the wreckage and ground scars revealed the airplane impacted terrain in a near-vertical, nose-down attitude. The airplane came to rest near the initial impact point, with the engine and airplane nose buried in a small crater. Several fragments of the airplane were scattered from the impact point and all major components were accounted for at the accident site. There was no evidence of a postcrash fire.

Both wings displayed accordion-type crush damage along their entire span; the main cabin was severely crushed, and the empennage also displayed heavy impact damage. Both wing fuel tanks were breached.

Due to damage, the position of the wing flaps could not be determined; however, the flap cable remained attached to the selector handle. The avionics, instruments, gauges, and cockpit controls were impact-damaged and unreadable. The attitude indicator was removed and examined; the gyro displayed scoring from contact with its housing, consistent with operation at the time of impact.

Left and right wing aileron control cable continuity was established from the aileron bell crank to the chain segment in the cockpit. The chain had separated from the yoke control bar, consistent with overload due to impact forces.

The rudder, stabilator, and pitch trim control cables remained attached to their respective control surfaces and were continuous to the recovery separation cuts. The pitch trim jackscrew

was extended about 4-5 threads above the cable drum, consistent with a neutral trim tab position.

The engine sustained impact damage, with the crankshaft broken just aft of the No. 1 main bearing journal, which had separated from the engine. The damage to the crankshaft and camshaft prevented manual engine rotation; a visual inspection of the valve train and the accessory section was conducted. The carburetor was broken from its intake flange. The float bowl and fuel inlet screen were free of contaminants and no pre-impact abnormalities were noted. The carburetor floats exhibited crushing consistent with hydraulic deformation. The oil screen was removed and was clear of contaminants. Both magnetos were impact fragmented. The vacuum pump was removed and disassembled; the internal vanes and rotor were broken, consistent with impact forces.

The top sparkplugs were removed, and the plugs exhibited light colored combustion deposits. The electrodes exhibited normal wear signatures.

The fixed pitch two-bladed propeller remained attached to the crankshaft flange. Both blades exhibited leading edge gouging and polishing.

Although the examination was limited due to impact damage, no pre-impact abnormalities were noted during the airframe or engine examinations.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	52
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Unknown
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	02/17/2017
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	100 hours (Total, all aircraft)		

## Pilot-Rated Passenger Information

Certificate:	Student	Age:	45
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Unknown
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):		Second Pilot Present:	
Instructor Rating(s):		Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	03/16/2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

## Aircraft and Owner/Operator Information

Aircraft Make:	PIPER	Registration:	N6433J
Model/Series:	PA28 180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-4851
Landing Gear Type:	Tricycle	Seats:	
Date/Type of Last Inspection:	06/05/2017, Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	4550.9 Hours as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Installed	Engine Model/Series:	O-360 SER
Registered Owner:	On file	Rated Power:	180 hp
Operator:	On file	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night
Observation Facility, Elevation:	KFWB	Distance from Accident Site:	1 Nautical Miles
Observation Time:	0035 UTC	Direction from Accident Site:	360°
Lowest Cloud Condition:		Visibility	
Lowest Ceiling:	Overcast / 400 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.08 inches Hg	Temperature/Dew Point:	8° C / 8° C
Precipitation and Obscuration:	Moderate - Fog		
Departure Point:	Gardner, KS (K34)	Type of Flight Plan Filed:	None
Destination:	Branson, MO (KPLK)	Type of Clearance:	None
Departure Time:	1700 CST	Type of Airspace:	

## Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	36.724722, -93.396111 (est)

## Medical And Pathological Information

The Stone County, Missouri, Medical Examiner's Office conducted autopsies on the two occupants. The causes of death were determined to be blunt injuries.

The FAA's Forensic Sciences laboratory at Oklahoma City, Oklahoma, conducted toxicological testing on both occupants. The specimens were not tested for carbon monoxide and cyanide. Specimens of the pilot were positive for ethanol in the liver and negative for tested drugs. The passenger tested positive for ethanol in muscle but negative in the brain. The test was also negative for tested drugs.



The levels of ethanol and finding in one tissue, but not another, is consistent with post-mortem production of ethanol.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Craig Hatch	<b>Report Date:</b>	11/06/2019
<b>Additional Participating Persons:</b>	David Johnson; FAA FSDO; Kansas City, MO Jon Hirsch; Piper Aircraft; Vero Beach, FL John Butler; Lycoming aircraft engines; Williamsport, PA		
<b>Publish Date:</b>	11/06/2019		
<b>Note:</b>	The NTSB traveled to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=96494">http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=96494</a>		

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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](#).