



# Aviation Investigation Final Report

<b>Location:</b>	Talihina, Oklahoma	<b>Accident Number:</b>	CEN14FA019
<b>Date &amp; Time:</b>	October 21, 2013, 15:30 Local	<b>Registration:</b>	N113WS
<b>Aircraft:</b>	Piper PA 28-140	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

The pilot did not obtain a formal weather briefing before the accident flight nor any flight following or air traffic control services while en route. Radar data indicated that the airplane was traveling toward the destination airport and that radar contact was lost about 29 miles from the accident site. Radar contact was likely lost due to the low altitude at which the airplane was flying. Four witnesses located along the route of flight observed the airplane flying at low altitude and in and out of instrument flight conditions. Two witnesses stated that heavy rain showers existed in the area at the time that they observed the airplane.

Family members reported to the Federal Aviation Administration that the airplane was overdue, and the airplane was subsequently located in a densely wooded area. Tree strikes were found at the accident site consistent with the airplane contacting the trees in a straight-and-level attitude. All of the airplane's major components were accounted for at the accident site. No preimpact airframe or engine anomalies were noted that would have precluded normal operation. A review of weather data for the time and area surrounding the accident revealed low visibility with moderate to heavy rain. The pilot likely flew the airplane at low altitude to maintain visual flight and subsequently flew into an area of known rain with reduced visibility, which resulted in his inability to see and maintain clearance from trees.

## Probable Cause and Findings

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

The pilot's lack of weather planning and his continued flight into an area of known rain with reduced visibility and his subsequent failure to maintain clearance with trees.

## Findings

<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Personnel issues</b>	Aircraft control - Pilot
<b>Environmental issues</b>	Rain - Not specified
<b>Aircraft</b>	Altitude - Not attained/maintained
<b>Personnel issues</b>	Weather planning - Pilot

## Factual Information

### History of Flight

<b>Enroute-cruise</b>	Other weather encounter
<b>Maneuvering</b>	Loss of control in flight (Defining event)
<b>Maneuvering</b>	Collision with terr/obj (non-CFIT)

On October 21, 2013, approximately 1530 central daylight time, a Piper PA-28-140, N113WS, impacted terrain while maneuvering near Talihina, Oklahoma. The airline transport pilot, who was the sole occupant, sustained fatal injuries. The airplane was destroyed. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Instrument meteorological conditions (IMC) prevailed at the time of the accident, and a flight plan was not filed. The flight originated from the Searcy Municipal Airport (SRC), Searcy, Arkansas, approximately 1330, and was en route to Elk City, Oklahoma.

Radar data showed the airplane traveled to the west/southwest shortly after departure from SRC and it reached a maximum altitude of 2,800 feet mean sea level (msl). Radar contact was lost at 1455 at an altitude of 2,200 feet msl, approximately 29 miles northeast of the accident site. There were no recorded communications between the pilot and air traffic control during the flight.

Witnesses, who were located along the route of the accident flight, reported they observed the airplane flying over their areas on a westerly heading about 1505. The last witness observed the airplane approximately 1520. Witnesses stated the airplane was flying at a low altitude, and in and out of IMC. Two witnesses also stated that heavy rain showers were in the area at the time they observed the airplane. Witnesses described the engine as "running smoothly" and the airplane did not appear to be in distress.

The airplane was subject to an alert notice (ALNOT) after family members reported the airplane had not arrived at its destination. Search and rescue efforts ensued, and the airplane was located on October 24, 2013, at 1400, by search personnel.

## Pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	71
<b>Airplane Rating(s):</b>	Single-engine land; Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Unknown
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	October 18, 2012
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 14000 hours (Total, all aircraft)		

The 71-year old pilot held an Airline Transport Pilot certificate with airplane single engine land, airplane multiengine land, and airplane single engine sea ratings; and also held a flight instructor certificate with airplane single engine and multiengine land ratings. The pilot's most recent second class medical certificate was issued on October 18, 2012, with a limitation to wear corrective lenses. The pilot reported on his medical application that he had accumulated 14,000 total flight hours, and 100 hours in the preceding six months. The pilot's logbooks were not located during the investigation.

According to the Federal Aviation Administration (FAA) records, the pilot was involved in an airplane accident on April 21, 2012. The National Transportation Safety Board's (NTSB) probable cause of that accident was listed as "The pilot's inadequate fuel monitoring, which resulted in a total loss of engine power due to fuel exhaustion." The pilot satisfactorily completed a reexamination check with the FAA on August 27, 2012.

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N113WS
<b>Model/Series:</b>	PA 28-140	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1965	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	28-20738
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	August 15, 2013 Annual	<b>Certified Max Gross Wt.:</b>	2150 lbs
<b>Time Since Last Inspection:</b>	24 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	5004 Hrs at time of accident	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-320-E2A
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	150 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

The accident airplane, a Piper PA-28-140 (serial number 28-20738) was manufactured in 1965. It was registered with the FAA on a standard airworthiness certificate for normal or utility operations. A Lycoming O-320-E2A engine, rated at 150 horsepower, powered the airplane.

The airplane was maintained under an annual inspection program. A review of the maintenance records indicated that an annual inspection was completed on August 15, 2013, at a total airframe time of 4,980 hours. The airplane had flown approximately 24 hours between the last inspection and the accident. The engine had accumulated 2,486 hours since overhaul.

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	RKR,451 ft msl	<b>Distance from Accident Site:</b>	23 Nautical Miles
<b>Observation Time:</b>	15:15 Local	<b>Direction from Accident Site:</b>	300°
<b>Lowest Cloud Condition:</b>	Unknown	<b>Visibility</b>	2 miles
<b>Lowest Ceiling:</b>	Unknown	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	350°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.05 inches Hg	<b>Temperature/Dew Point:</b>	13°C / 13°C
<b>Precipitation and Obscuration:</b>	Heavy - Thunderstorm - Rain		
<b>Departure Point:</b>	Searcy, AR (SRC)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Elk City, OK (ELK)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	13:30 Local	<b>Type of Airspace:</b>	

A NTSB senior meteorologist reviewed weather documents related to the accident site location and estimated accident time. There was no record of or knowledge of the pilot obtaining a formal weather briefing before the flight.

Review of the National Weather Service (NWS) Surface Analysis Chart for 1300 depicted a frontal wave and low pressure system in the immediate vicinity of the accident site and along the route of flight. The chart depicted light continuous rain with temperature-dew point spreads of 4 degrees Fahrenheit (F) or less.

The NWS Regional Radar Mosaic for 1500 depicted a line of weather echoes extending from western Oklahoma northeast to northern Arkansas. The band of echoes was along the planned route of flight and near the accident site.

The NWS Weather Depiction Chart for 1400 depicted an area of instrument flight rules (IFR) conditions surrounding by a larger area of marginal visual flight rules (MVFR) extending over southeast Oklahoma along and behind the cold front. The model depicted 2.5 miles visibility with moderate rain and an overcast ceiling at 1,300 above ground level (agl). Visual flight rules (VFR) conditions were depicted over Arkansas along the previous portion of the flight route.

The closest weather reporting location to the accident site was from Robert S. Kerr Airport (RKR), Poteau, Oklahoma, located approximately 23 miles northeast of the accident site at an elevation of 451 feet. The airport had an Automated Weather Observing System (AWOS), which was not reporting sky condition surrounding the accident time. At 1515, the station reported the wind from 350 degrees at 8 knots, visibility 2 miles, heavy rain, temperature and dew point 13 degrees Celsius (C), and altimeter setting of 30.06 inches of mercury (Hg).

The next closest reporting location to the accident site was from McAlester Regional Airport (MLC), McAlester, Oklahoma, located approximately 24 miles west-northwest of the accident site at an elevation of 771 feet. The airport had an Automated Surface Observation System (ASOS) and at 1505, the station reported the wind from 010 degrees at 8 knots, visibility 10 miles, light rain, ceiling broken at 800 feet, overcast at 4,900 feet, temperature 11 degrees C, dew point 9 degrees C, and an altimeter setting of 30.06 inches of Hg. At 1514, the MLC ASOS special observation reported the wind from 020 degrees at 9 knots, visibility 4 miles in heavy rain and mist, scattered clouds at 800 feet, overcast at 5,500, temperature 11 degrees C, dew point 9 degrees C, and an altimeter setting of 30.06 inches of Hg. Distant lightning was noted to the east and south.

The Geostationary Operational Environmental Satellite (GOES) no. 13 infrared satellite imagery at 1502 depicted the accident site under a layer of clouds with cloud tops near 12,000 feet. The imaged showed a band of higher cumulus clouds immediately north of the accident site.

The NWS Weather Surveillance Radar (WSR) base reflectivity image for 1504 showed the accident site near the leading edge of an area of echoes, with the main line immediately north of the accident site. A review of lightning data detected no significant lightning activity within 20 miles of the accident site between 1400 and 1530. A large band of lightning was detected further south with the echoes across southern Arkansas.

The NWS WSR base reflectivity image for 1521 indicated very light reflectivity values over the last 15 to 20 minutes of the flight, consistent with low stratiform clouds and a rain shower.

The closest Terminal Aerodrome Forecast (TAF) to the accident site was issued for MLC. The forecast expected rain showers in the vicinity of the airport with temporary rain, and ceilings broken to overcast at 5,000 feet agl. IFR conditions were not expected during the accident period.

The NWS Area Forecast provided the en route forecast and expected broken sky conditions at 5,000 feet msl with cloud tops to 20,000 feet, with isolated thunderstorm and rain showers. The forecast was updated while the flight was en route to widely scattered thunderstorms and rain showers with tops to 32,000 feet.

## WRECKAGE AND IMPACT INFORMATION

The accident site was located at an elevation of 1,746 feet mean sea level, in densely wooded and hilly terrain. Several cut trees, consistent with the impact of the airplane, approximately 40 feet from ground level were noted adjacent to the main wreckage along a measured magnetic heading of 220 degrees. The main wreckage consisted of the fuselage, empennage, engine, and inboard section of the left wing. The right wing and outboard section of the left wing were separated and located within the debris field.

The fuselage displayed deformation and buckling consistent with the airplane impacting trees and terrain. The engine remained attached to the fuselage, and the nose landing gear was bent aft. The

propeller was separated and located adjacent to the fuselage. The four occupant seats were found in place and secure to the fuselage structure. The left front seat belt was found buckled, and the straps were cut during extrication. The altimeter Kollsman window was set to 30.02 inches of Hg, and the altitude indication was broken. The engine tachometer showed 1,100 RPM and 5,004.23 hours.

The vertical stabilizer was attached at the aft attach point and the forward attach point was loose. The vertical stabilizer displayed damage consistent with the impact sequence near the top of the stabilizer. The rudder remained attached. The horizontal stabilator remained attached and displayed damage consistent with the impact sequence. The balance tube was secure, and both control cables were continuous to the T bar. The trim tab remained attached and displayed 5 threads upper extension, which was consistent with a neutral trim position.

The outboard section of the right wing was separated between the aileron and flap. The outboard section, with the aileron attached, was found in the debris field. The inboard section was separated from the fuselage and found in the debris field. The aileron bellcrank was pulled loose, and both cables were secured to the bellcrank and wing root area. The cable separations were broomstrawed, consistent with overload failure. The fuel tank was compromised and no fuel was noted in the tank. The right main landing gear was attached to the inboard wing section.

The outboard section of the left wing, with the aileron attached, was separated and found lodged in a tree along the debris path. The inboard section displayed leading edge damage and was bent aft along the fuselage. The flap remained attached to the inboard section of the wing. The left main landing gear was separated and located near the initial tree strikes. The aileron bellcrank had been pulled loose from the wing and was found with the inboard section of the wing. The balance cable was continuous to the right wing root area where it was separated and broomstrawed. The control cable was continuous from the aileron bellcrank and remained attached to the control wheel chain. The fuel tank was compromised and no fuel was noted in the tank. The flap link position was consistent with the flaps in the fully retracted position.

The engine was compressed right and aft toward the forward fuselage. The engine starter Bendix housing displayed rotational scoring. The carburetor was fractured and separated at the throttle plate. The fuel inlet screen was removed and was found clear of debris. The engine driven fuel pump was actuated by hand and it displaced fuel. The top spark plugs were removed and displayed a color consistent with normal combustion when compared to the Champion Spark Plug Wear Guide. Both magnetos were removed and rotated by hand. Spark was noted at all outlet points. The vacuum pump was separated from its mounting pad, and the vacuum pump drive coupling was intact. The unit was disassembled, and the carbon vane block was found fractured.

The engine was rotated by hand using a turning tool inserted at the vacuum pump drive. Mechanical continuity was noted throughout the engine. Thumb compression was noted on all cylinders except for the number one cylinder which displayed damage to the intake and exhaust pushrods.

The propeller was separated and all but two attach bolts were sheared. One blade was bent forward approximately 1-2 degrees, displayed leading edge gouges, and chordwise surface scratches were noted along the length of the blade. The other blade was bent aft approximately 30-35 degrees, displayed



leading edge gouges, and chordwise surface scratches were noted along the length of the blade.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	34.618888,-95.02861 (est)

## Medical and Pathological Information

The Office of the Chief Medical Examiner, Tulsa, Oklahoma, performed an autopsy on the pilot on October 25, 2013. The cause of death was listed as multiple blunt force injuries.

The FAA Civil Aerospace Medical Institute prepared a Final Forensic Toxicology Accident Report on specimens from the pilot's autopsy. Results were negative for ethanol, and the specimens were unsuitable for carbon monoxide testing. Testing for cyanide was not performed. Unspecified levels of Dextromethorphan and Dextrophan were detected in lung, liver, and blood specimens. A unspecified level of Doxylamine was detected in the urine specimen. Dextromethorphan and Dextrophan are non-sedating, over the counter medications that are typical for treating heartburn, colds, and nasal drainage.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sauer, Aaron
<b>Additional Participating Persons:</b>	Dave Doerner; Federal Aviation Administration; Oklahoma City, OK Mike McClure; Piper Aircraft; Dallas, TX John Butler; Lycoming Engines; Arlington, TX
<b>Original Publish Date:</b>	July 30, 2014
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<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=88312">https://data.nts.gov/Docket?ProjectID=88312</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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](#).