



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Westcliffe, Colorado	<b>Accident Number:</b>	CEN11FA150
<b>Date &amp; Time:</b>	January 9, 2011, 13:40 Local	<b>Registration:</b>	N727MC
<b>Aircraft:</b>	Piper PA 46-350P	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

While en route to the destination airport, the pilot was issued a clearance to descend. As the airplane descended to the assigned altitude, radar plots depicted the airplane entering a right turn, climbing rapidly, and then descending rapidly in a spiral-like pattern. The airplane wreckage was found the following day in mountainous terrain. Several tall trees surrounded the perimeter of the wreckage. Many of the trees showed scuff marks down the trunks consistent with the airplane impacting the terrain in a near-vertical descent. All airplane components were accounted for at the accident site. A postaccident examination of the airplane showed no preimpact failures of the airframe or the engine. A weather analysis revealed that the airplane was descending in the immediate vicinity of a stationary front. The weather conditions in the area were conducive to the production of moderate to severe turbulence, mountain wave activity with updraft/downdrafts in excess of 750 feet per minute, and moderate icing. The radar data confirmed that the airplane began its rapid descent shortly after entering cumuliform clouds. The radar information along with the wreckage at the accident site was consistent with the pilot losing control while trying to maneuver the airplane in an area of turbulent weather.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of control following an encounter with moderate to severe weather.

## Findings

<b>Aircraft</b>	(general) - Not attained/maintained
<b>Environmental issues</b>	(general) - Effect on operation
<b>Environmental issues</b>	Clouds - Effect on operation
<b>Environmental issues</b>	Conducive to structural icing - Effect on operation
<b>Personnel issues</b>	Aircraft control - Pilot

## Factual Information

### HISTORY OF FLIGHT

On January 9, 2011, approximately 1340 mountain standard time, a single-engine Piper PA 46-350P, N727MC, impacted mountainous terrain in the Sangre de Cristo Mountains near Westcliffe, Colorado. The private pilot and passenger were both fatally injured. The airplane was substantially damaged. The airplane was owned and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a cross-country flight. The airplane descended through instrument meteorological conditions (IMC), which operated on an instrument flight rules flight plan. The airplane departed the Phoenix-Deer Valley Airport (DVT), Phoenix, Arizona, approximately 1200 and was en route to the Pueblo Memorial Airport (PUB), Pueblo, Colorado.

The airplane disappeared from radar while en route to PUB. An alert notice (ALNOT) was issued for the missing airplane and a search began. On the afternoon of December 10, 2011, search teams located the airplane.

A translation of radar data obtained from the FAA depicted the airplane level at FL 250 while en route to DREXL. At 1329:46, The airplane descended from FL250 at about 1,200 feet per minute (fpm). At 1333:25, the airplane turned right and increased the descent rate to approximately 3,000 fpm at an altitude reading of 17,600 feet. At 1333:54, the airplane climbed about 5,000 fpm to approximately 19,200 feet. The airplane then descended at a rate in excess of 7,000 fpm with the last radar return at 1334:33 at an altitude of 12,200 feet (about 2,500 feet above ground level).

### PERSONNEL INFORMATION

The pilot, age 66, held a private pilot certificate for airplane single-engine land, airplane multi-engine land, and instrument airplane. A review of the pilot's log book revealed that he had logged over 3,030 hours, with at least 467 hours in the same make and model as the accident airplane. The pilot's last flight review was completed on October 2, 2008. On July 17, 2009, the pilot received a JetProp directed checkout in the JetProp DLX airplane. In addition, the pilot flew an instrument proficiency check on June 10, 2010. Neither the JetProp checkout nor the instrument check were flown as a flight review. On February 26, 2009, the pilot was issued a third class medical certificate with the restriction, "must wear corrective lenses for near and distant vision."

In the previous year, the pilot had logged 37 instrument approaches. A majority of the approaches (29), in addition to the pilot's instrument proficiency flight, were flown in a Mooney M20K. The pilot's Mooney had the original navigation equipment with the addition of a Garmin GNS 530W GPS/Nav/Comm and a Garmin GDL 69A Satellite Weather receiver.

### AIRCRAFT INFORMATION

The single-engine airplane, serial number 4636085, was manufactured in 1997. The airplane

was powered by a 750 horsepower Pratt & Whitney Canada PT6A-35 engine, driving a Hartzell four-bladed constant speed HC-E4N-3N propeller, that was installed on October 19, 2006, by a Supplemental Type Certificate (STC). This STC (ST00541SE), changed the factory engine to the PT6A as a JetProp DLX, installed by Rocket Engineering Corporation on October 19, 2006. A concurrent 100-hour and annual inspection was conducted on January 13, 2010, at a total airframe time of 3,594.6 hours and an engine total time of 327.4 hours. Utilizing the pilot's log book, the airplane would have accrued almost 3,734 hours at the time of the accident.

A fixed base operator at DVT had last serviced the airplane fuel tanks on the morning of the accident with 104 gallons of Jet-A and an ice inhibitor. Personnel at the fixed base operator reported that the tanks were full of fuel prior to the airplane's departure.

The airplane's avionics consisted of a Garmin G600 Integrated Avionics System combined with a Garmin GDL 69A, a Garmin GNS 530W, and a Garmin GNS 430W GPS/Nav/Comm.

#### METEOROLOGICAL INFORMATION

A review of the weather present on the day of the accident revealed that a frontal wave developed two low pressure systems, one over central Colorado and the other over northern New Mexico. The accident site was in the immediate vicinity of a stationary front between the two low pressure systems. In addition, an upper air sounding observation conducted from site number 72469, Denver, Colorado, supported the potential for turbulence above 17,000 feet with a probability of moderate turbulence between 17,300 and 18,000 feet. The sounding also supported the potential for mountain wave activity and identified several potential waves, one centered at 19,331 feet with conditions favorable for updrafts/downdrafts of 750 feet per minute (fpm), and capable of producing moderate to severe turbulence. In addition, the freezing level was determined to be a ground level with conditions favorable for ice production in cloud.

A review of Geostationary Operational Environmental Satellite number 13 (GOES-13) and Weather Surveillance Radar-1988 (WSR-88D) data revealed the airplane rapidly descended into terrain shortly after entering cumuliform clouds with corresponding "very light" precipitation. Pilot reports (PIREPs) confirmed the presence of mountain wave activity near the accident flight. Based off of prevailing weather at weather reporting stations in Alamosa, Colorado, and Pueblo, Colorado, visual meteorological conditions would have existed below the IMC layer.

The pilot received an abbreviated weather briefing from the Prescott Contracted Flight Service Station on the morning of the accident flight. The conversation's transcript confirmed that the pilot received weather conditions for PUB and Amarillo International Airport (AMA), Amarillo, Texas. In addition, the pilot received advisories for high level turbulence between flight level (FL) 180 and FL230 and an advisory for moderate ice between the freezing level (varied from surface to 9,000 feet) and FL180.

#### COMMUNICATIONS

Radio transcripts from the Denver Air Route Traffic Control Center (ARTCC) revealed that the

pilot checked in at 1947:36 and requested to fly direct to DREXL (an intersection point, not an initial approach fix) for the ILS runway 8L at PUB. The pilot was issued a clearance to procedure direct DREXL then direct PUB. At 2027:05 the pilot was issued a clearance to descend, at pilot's discretion, to 17,000 feet. The pilot acknowledged the clearance and stated that he intended to start his descent in two minutes. No further transmissions were made by the pilot.

## WRECKAGE AND IMPACT INFORMATION

The wreckage of the airplane was located in a heavily wooded area of the Sangre de Cristo Mountains at a measure altitude of 9,733 feet mean sea level and was aligned on a 290 degree magnetic heading. Several tall trees surrounded the perimeter of the wreckage and a few trees displayed scuffing down the bark. All airplane components were accounted for at the accident site.

The lower portion of the fuselage displayed extensive crushing damage with a rippling of the lower fuselage (belly) skin. Starting at an area between the left wing's flap and aileron and the wing tip, the wing was heavily damaged, twisted, and torn. Paint transfers on rocks found to the left of the fuselage depicted a left wing strike. The right wing's leading edge was crushed rearwards with multiple semi-circular impacts on the leading edge consistent with tree strikes. At the right wing's mid-span the wing was heavily damaged and torn. The empennage remained attached to the fuselage and was twisted slightly to the left and bent upwards; it rested against a tree which displayed scraped bark down the surface of the tree. The fuel tanks were breached and the odor of fuel was present at the accident site. Flight control continuity was established from the flight control surfaces to an area leading to the control column and rudder pedals.

The propeller remained attached to the engine. All four blades displayed S-bending, curling, and chord-wise scratches. The spinner cone displayed rotational scoring and scratches. All three landing gear and the flaps were found in the retracted position. The throttle quadrant was crushed, but both the throttle and propeller were near the full forward position. The airspeed indicator displayed 150 knots. The vertical speed indicator read a 4,000 feet per minute (fpm) descent. The fuel selector was positioned for the right tank.

An engine examination was conducted by a technical adviser from Pratt & Whitney Canada under the auspices of the NTSB. In the compressor section, the first and second stage blades displayed circumferential rubbing with corresponding scoring of the stage shrouds. Stator vanes were deformed into the direction of rotation with signatures of contact between the vanes and the rotor. The compressor turbine shroud, compressor turbine, power turbine shroud, and power turbine blades displayed circumferential rubbing and scoring, consistent with engine operation at the time of impact. No preimpact failures were noted with the engine.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on January 13, 2011, by the El Paso County Coroner's Office as authorized by the Huerfano County Coroner. The manner of death was ruled an accident.

The Federal Aviation Administration (FAA) Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma, performed forensic toxicology on specimens from the pilot. The specimens were marked putrefied. The report noted the following:

333 (mg/dL, mg/hg) ETHANOL detected in Liver  
 16 (mg/dL, mg/hg) ETHANOL detected in Muscle  
 10 (mg/dL, mg/hg) ETHANOL detected in Lung  
 NO ETHANOL detected in Heart  
 NO ETHANOL detected in Spleen  
 NO ETHANOL detected in Kidney

Notes: The ethanol found in this case is from sources other than ingestion.

Metoprolol detected in Liver  
 Metoprolol detected in Kidney

The United States National Library of Medicine lists metoprolol as a medication “used alone or in combination with other medication to treat high blood pressure.” The pilot had last reported treatment of high blood pressure with irbesartan.

### History of Flight

Enroute-descent	Other weather encounter
Enroute-descent	Inflight upset
Enroute-descent	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	66, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<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>	February 26, 2009
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	October 2, 2008
<b>Flight Time:</b>	(Estimated) 3030 hours (Total, all aircraft), 467 hours (Total, this make and model), 2785 hours (Pilot In Command, all aircraft), 47 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N727MC
<b>Model/Series:</b>	PA 46-350P	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	4636085
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	January 13, 2010 Annual	<b>Certified Max Gross Wt.:</b>	4300 lbs
<b>Time Since Last Inspection:</b>	140 Hrs	<b>Engines:</b>	1 Turbo prop
<b>Airframe Total Time:</b>	3734 Hrs at time of accident	<b>Engine Manufacturer:</b>	P&W Canada
<b>ELT:</b>	C126 installed, activated, aided in locating accident	<b>Engine Model/Series:</b>	PT6A-35
<b>Registered Owner:</b>		<b>Rated Power:</b>	750 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KALS, 7539 ft msl	<b>Distance from Accident Site:</b>	35 Nautical Miles
<b>Observation Time:</b>	12:52 Local	<b>Direction from Accident Site:</b>	216°
<b>Lowest Cloud Condition:</b>	Few / 6000 ft AGL	<b>Visibility:</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	15 knots / 23 knots	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	180°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.59 inches Hg	<b>Temperature/Dew Point:</b>	6°C / -10°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Phoenix, AZ (DVT )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Pueblo, CO (PUB )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	12:00 Local	<b>Type of Airspace:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 Fatal	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Fatal	<b>Latitude, Longitude:</b>	37.894721,-105.440551(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Aguilera, Jason
<b>Additional Participating Persons:</b>	Tom Wiesner; FAA FSDO; Denver, CO Charles Little; Piper Aircraft Company; Chino Hills, CA Beverly Harvey; Transportation Safety Board of Canada; Quebec, Canada
<b>Original Publish Date:</b>	December 19, 2011
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=78139">https://data.nts.gov/Docket?ProjectID=78139</a>

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).