



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Sandia Park, NM	<b>Accident Number:</b>	CEN16FA042
<b>Date &amp; Time:</b>	11/16/2015, 1300 MST	<b>Registration:</b>	N2440R
<b>Aircraft:</b>	Cessna 182G	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	VFR encounter with IMC	<b>Injuries:</b>	3 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The instrument rated pilot did not receive a weather briefing nor file a flight plan prior to departing on a VFR cross-country flight. Radar data showed that the airplane proceeded west on course after departure. As the airplane neared a north/south-oriented mountain range, it deviated from the direct course to the destination, turning to the southwest and then to the north. Overlaying the airplane's flight path on a weather radar image showed that the airplane began the deviation as it approached an area of precipitation. Additionally, photographs taken by a passenger during the flight indicated that the airplane was flying above a solid overcast. As the airplane flew north parallel to the eastern slope of the mountain range, the pilot contacted the destination airport's air traffic control tower and reported that he was descending out of 13,000 ft, that he was between cloud layers, and that he wanted to perform an instrument landing system approach to the airport. He reported being 5 miles east of the airport; however, radar data indicated that the airplane was about 25 miles east and on the other side of the mountain range from the destination airport. The pilot then said the situation was "pretty hairy . . . I can see the ground . . . I'm just trying to maintain visibility right now," and, a few minutes later, "we are really having a tough time trying to get out of this [\*mess]." Radio contact was lost shortly thereafter. Radar data indicated an erratic flight path and a varying groundspeed during the last 4 minutes of the flight. Radar contact was lost, and the airplane impacted heavily wooded mountainous terrain in a near vertical attitude. Examination of the wreckage revealed no evidence of any anomalies that would have precluded normal operation of the airplane.

In addition to the precipitation indicated by the weather radar imagery, satellite imagery showed cloud cover over the accident area with tops about 28,000 ft. The weather imagery, the pilot's statements, the erratic flight path, and the airplane's impact attitude are consistent with the airplane entering instrument meteorological conditions and the pilot developing spatial disorientation and losing control.

Toxicological testing revealed 0.326 (ug.mL, ug/g) sertraline, a prescription antidepressant, in the pilot's heart blood and desmethylsertraline, a metabolite of sertraline, in the pilot's liver

and heart blood. The pilot's medical records indicated that he was being treated for depression with sertraline, and, several months before the accident, the pilot's health care provider noted that the pilot's depression was well controlled.. Therefore, it is unlikely that effects from the pilot's depression or use of sertraline contributed to the accident.

## Probable Cause and Findings

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

The pilot's continued visual flight into instrument meteorological conditions, which resulted in spatial disorientation and a loss of control.

### Findings

<b>Aircraft</b>	Performance/control parameters - Not attained/maintained (Cause)
<b>Personnel issues</b>	Decision making/judgment - Pilot (Cause)
	Spatial disorientation - Pilot (Cause)
	Aircraft control - Pilot (Cause)
<b>Environmental issues</b>	Low visibility - Effect on personnel (Cause)
	Low visibility - Effect on personnel (Cause)

## Factual Information

### History of Flight

<b>Enroute-cruise</b>	VFR encounter with IMC (Defining event) Loss of visual reference
<b>Maneuvering</b>	Loss of control in flight
<b>Uncontrolled descent</b>	Collision with terr/obj (non-CFIT)

On November 16, 2015, at 1259 mountain standard time (mst), a Cessna 182G, N2440R, impacted wooded mountainous terrain in Sandia Park, New Mexico. The commercial pilot and the two passengers were fatally injured. The airplane was destroyed. The airplane was registered to and operated by Moore Aviation, LLC, Wichita Falls, Texas, under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Instrument meteorological conditions (IMC) prevailed at time of the accident, and no flight plan had been filed. The cross-country flight originated from Kickapoo Airport (KCWC), Wichita Falls, Texas, at 0937 central standard time, and was en route to Double Eagle II Airport (KAEG), Albuquerque

There was no record that the pilot received a weather briefing before his departure from KCWC. Radar data showed that the airplane proceeded on course after departing KCWC. The radar data indicated that the airplane's transponder was set on mode A instead of mode C, and no altitude information was transmitted. Ground speeds during the en route portion of the flight were consistent with normal cruise speeds. As the airplane neared the Sandia Mountains, a north/south-oriented mountain range, it deviated from the direct course to its destination, turning to the southwest and then to the north.

According to Federal Aviation Administration (FAA) transcripts, at 1252:01, as the airplane flew north parallel to the eastern edge of the mountain range, the pilot contacted KAEG air traffic control tower (ATCT) and reported that he was "descending out of 13,000 feet, trying to get over weather but we couldn't get high enough to make it work," and that he was "kind of in between layers." The pilot said that he wanted to "shoot the I-L-S (instrument landing system)" and that he was "east, probably less than 5 miles" from KAEG. The pilot was given the KAEG localizer frequency and told to contact Albuquerque (KABQ) ATCT for a "short range I-F-R (instrument flight rules) clearance."

The pilot contacted KABQ ATCT at 1252:45 mst and reported that he was 5 miles east of KAEG and wanted "to shoot the I-L-S [because] we got caught up in some weather unintentionally." The controller assigned the airplane a beacon code but was unable to locate the airplane on radar.

KABQ ATCT coordinated with KABQ air route traffic control center (ZAB) in an attempt to locate the airplane. ZAB reported that they had received radar returns from the airplane, but that the airplane was on the east side of the Sandia Mountains, 25 miles east of KAEG. The minimum en route altitude in that area was 11,500 feet.

At 1254:24, the pilot said it was getting "pretty hairy. . . I can see the ground . . . I'm just trying to maintain visibility right now." Communications with the pilot intermittent, and ZAB

requested an overflying air carrier, Envoy Air flight 3058, to relay messages, At 1257:35, in response to receiving the KABQ altimeter setting (29.61 inches of mercury) provided by the Envoy Air pilot, the accident pilot said, "We are really having a tough time trying to get out of this [\*mess]." This was the last radio transmission from the pilot.

Radar data showed that during the last 4 minutes of flight, the airplane's flight path was erratic and its ground speed varied. During the last minute of flight, two computed ground speeds were 17 and 42 knots, which were below the airplane's stall speed of 48 knots. The last radar contact was about 1259.

An alert notice was issued by ZAB, and the wreckage was located about 1330 the following afternoon. The accident site was at an elevation of 7,634 ft., about 23 nautical miles east of KAEG, and 464 ft west of the last radar contact.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	35, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	4-point
<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 2 Without Waivers/Limitations	<b>Last FAA Medical Exam:</b>	03/05/2015
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	(Estimated) 500 hours (Total, all aircraft), 100 hours (Total, this make and model)		

The pilot held a commercial pilot certificate with airplane single-engine land, airplane multiengine land, and instrument ratings, and a second class airman medical certificate with no restriction or limitations. He also held a mechanic's certificate with airplane and powerplants ratings and an inspector authorization. The pilot was a former U.S. Marine Corps aviation mechanic.

A review of the pilot's logbook revealed entries from October 8, 2008, to September 28, 2015. According to the logbook, the pilot had logged the following flight hours:

Total Time: 700.1  
Pilot-in-Command: 648.8  
Dual Instruction: 60.5  
Cessna 182G: 33.3  
Airplane Single Engine Land: 498.3  
Airplane Multiengine Land: 205.2

Cross-country: 577.4  
 Night: 95.6  
 Actual Instruments: 45.0  
 Simulated Instruments: 75.6  
 Instrument Approaches: 79

The pilot had logged only one biennial flight review, which occurred on February 16, 2011. Between May 13, 2015, and the day of the accident, in addition to 45 hours of flight in actual instrument conditions, the pilot had logged 11 instrument approaches.

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N2440R
<b>Model/Series:</b>	182G	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1964	<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	18255540
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Continental/P. Ponk
<b>ELT:</b>	C91 installed, activated, aided in locating accident	<b>Engine Model/Series:</b>	O-470-50
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	175 hp
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

The airplane, serial number 182-55540, was manufactured by the Cessna Aircraft Company (now Textron Aviation) in 1964. It was equipped with a 275-horsepower Continental/P. Ponk O-470-50 engine, driving a 3-blade, all metal, constant speed Hartzell PHC-G3YF-1RF propeller.

According to the bill of sale, the airplane was purchased by Moore Aviation on August 1, 2013. Aircraft maintenance records revealed that the last annual inspection was completed on June 19, 2015, at a tachometer and airframe total time of 4,926.76 hours. On that date, the engine, which had accrued 3,145 total hours, was overhauled and converted from a Continental IO-520-E to a Continental/P. Ponk O-470-50. At the accident site, the tachometer read 4,969.98 hours. The last pitot-static system, altimeter, and transponder-encoder checks were conducted on September 6, 2012, at a tachometer reading of 4,870.13 hours.

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KABQ, 5355 ft msl	Distance from Accident Site:	23 Nautical Miles
Observation Time:	1156 MST	Direction from Accident Site:	270°
Lowest Cloud Condition:	Few / 500 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 4100 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	21 knots / 27 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	290°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.62 inches Hg	Temperature/Dew Point:	4° C / -1° C
Precipitation and Obscuration:			
Departure Point:	Wichita Falls, TX (KCWC)	Type of Flight Plan Filed:	None
Destination:	Albuquerque, NM (KAEG)	Type of Clearance:	None
Departure Time:	0937 CST	Type of Airspace:	Class G

The following Meteorological Terminal Aviation Routine Weather Report (METAR) was recorded at KABQ at 1252:

Wind, 290° at 21 knots, gusts to 27 knots; visibility, 10 miles; sky condition, few clouds at 500 ft, 4,100 ft broken, 11,000 ft overcast; temperature, 4° C.; dew point, -1° C.; altimeter setting, 29.62 inches of mercury; remarks: site is automated and has a precipitation sensor, peak wind 260° at 36 knots at 1200, rain ended at 1223, sea level pressure 1010 millibars, mountains obscured northeast through southeast.

The following METAR was recorded at KAEG at 1235:

Wind, 260° at 20 knots, gusts to 32 knots; visibility, 2-1/2 miles, snow; sky condition, few clouds at 1,500 ft, 4,200 ft scattered, 5,000 ft broken; temperature, 3° C.; dew point, -2° C.; altimeter setting, 29.61 inches of mercury.

Geostationary Operational Environmental Satellite (GOES)-15 visible and infrared imagery from 1300 was reviewed. The GOES-15 visible imagery identified cloudy conditions over the accident location, and the infrared cloud-top temperatures were about -39°C over the accident site, which corresponded to a cloud-top height of about 28,000 ft. The cloud-top temperatures varied in the region, with some satellite-derived temperatures reaching 0°C, suggesting cloud top heights from near ground level to 28,000 ft (or possibly below higher tops of terrain in the Albuquerque region).

A regional weather radar composite reflectivity mosaic at 1300 showed a wide area of light precipitation over the accident region. Overlaying the airplane's flight path on a weather radar image from 1259:22 showed that the airplane began to deviate from its west course as it

approached the area of precipitation.

The rear seat passenger took cell phone photos while en route, and sent them to friends in Wichita Falls before the accident. Two of those photos were obtained from KOB-TV, Albuquerque. It could not be determined where the airplane was when the photographs were taken. The first photo showed the airplane flying in VFR conditions but there were clouds in the distance. The second photo showed the airplane flying over a solid overcast.

### Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal	Aircraft Fire:	Unknown
Ground Injuries:	N/A	Aircraft Explosion:	Unknown
Total Injuries:	3 Fatal	Latitude, Longitude:	35.000000, -106.000000

The on-scene wreckage examination was conducted on November 17, 2015. The airplane had impacted heavily wooded mountainous terrain intact. Ground scars and damage to the airplane were consistent with an acute nose-down (about 90°) impact attitude, and the airplane came to rest in a near vertical attitude. The top of a nearby tree was severed, and branches were scattered around on the ground. Between the rear cabin and the empennage, the fuselage was buckled forward about 30°. All major airplane components were located and identified. Flight control continuity was established. Both the left and right wing leading edges displayed accordion-type crush damage. The fuel selector faceplate indicated that the right main tank had been selected. Due to the position of the airplane and the snow, the engine was not examined on site.

Examination of the flight instruments revealed the following:

Altimeter: 1,980 ft  
Kollsman window: 29.90 inches of mercury  
Tachometer: 850 rpm  
Recorder: 4,969.98 hours  
Directional gyro: 074°  
Clock: 1023

Examination of the lower left switch panel revealed the following:

Master switch: On  
Ignition switch: Left magneto  
Standby vacuum: Off  
Pitot heat: Off

Navigation lights: Off  
Rotating beacon: On

## Medical And Pathological Information

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The Office of the Medical Examiner, University of New Mexico Health Sciences Center, in Albuquerque performed an autopsy on the pilot. According to the autopsy report, the pilot's cause of death was blunt trauma. No significant natural disease was identified by autopsy. The FAA's Bioaeronautical Sciences Research Laboratory in Oklahoma City, Oklahoma, conducted toxicology tests on samples from the pilot. According to the toxicology report, no carbon monoxide was detected in cavity blood, and no ethanol was detected in vitreous. Cyanide testing was not performed. An unknown quantity of sertraline was detected in the liver, and 0.326 (ug/ml, ug/g) sertraline was detected in heart blood. Desmethylsertraline was detected in the liver and heart blood. According to FAA's forensic toxicology drug web page, sertraline (Zoloft®) is a prescription antidepressant used for a variety of conditions including depression, obsessive compulsive disorder, panic attacks, posttraumatic stress disorder, and social anxiety disorder. Sertraline is not generally considered to be impairing, although it carries a warning about performance. Desmethylsertraline is the predominant active metabolite of sertraline, and is substantially less active than sertraline. It was learned that the Veterans Administration Hospital in Wichita Falls had prescribed the drug to the pilot for the treatment of his depression.

NTSB's medical officer reviewed the pilot's medical file. According to her report, "The 35 year old male pilot had reported no medical problems and no medications to the FAA. According to the autopsy performed by the University of New Mexico, Office of the Medical Investigator, the cause of death was blunt trauma and the manner of death was accident. No significant natural disease was identified by autopsy. The pilot's personal records revealed a history of cervical spine surgery and major depression treated with sertraline around the time of the accident. Toxicology testing identified sertraline and its metabolite desmethylsertraline in liver and heart blood. The level of sertraline in the heart blood was 0.326 ug/ml. Sertraline is not generally considered to be impairing, although it carries a warning about performance. A few months before the accident, the pilot's health care provider felt his depression was well controlled."

## Additional Information

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According to FAA Advisory Circular AC 60-4A, "Pilot's Spatial Disorientation," tests conducted with qualified instrument pilots indicated that it can take as long as 35 seconds to establish full control by instruments after a loss of visual reference of the earth's surface. AC 60-4A further states that surface references and the natural horizon may become obscured even though visibility may be above visual flight rules minimums and that an inability to perceive the



natural horizon or surface references is common during flights over water, at night, in sparsely populated areas, and in low-visibility conditions.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Arnold W Scott	<b>Report Date:</b>	09/26/2017
<b>Additional Participating Persons:</b>	Richard Hammer; FAA Flight Standards District Office; Albuquerque, NM David Jones; FAA Flight Standards District Office; Albuquerque, NM William K Landers; FAA Flight Standards District Office; Albuquerque, NM Jon Hirsch; Textron Aviation; Wichita, KS Ernie Hall; Textron Aviation; Wichita, KS Kurt Gibson; Continental Motors; Mobile, AL		
<b>Publish Date:</b>	09/26/2017		
<b>Note:</b>	The NTSB traveled to the scene of this accident.		
<b>Investigation Docket:</b>	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92331">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=92331</a>		

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