



# Aviation Investigation Final Report

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<b>Location:</b>	Fall City, Washington	<b>Accident Number:</b>	WPR14FA286
<b>Date &amp; Time:</b>	July 8, 2014, 08:07 Local	<b>Registration:</b>	N5816B
<b>Aircraft:</b>	Cessna 182	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	VFR encounter with IMC	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The private pilot intended to reposition the airplane for maintenance to an airport about 23 nautical miles north-northwest of the departure airport. Low ceilings and fog were predominant in the area, with treetops on the adjacent golf course to the west obscured by fog. At the time of departure, the ceiling at the airport was most likely low, but the pilot elected to depart. Recovered GPS data revealed that, immediately after taking off to the west, the pilot turned to the north toward rising terrain. The pilot then, most likely after encountering a low ceiling, started a left turn, during which the airplane ascended to an altitude of about 515 ft. About 16 seconds after starting the left turn, the airplane had descended to an altitude of about 217 feet and was heading south. The airplane then began to climb, and, 10 seconds later, the airplane had reached an altitude of 577 ft; it then began to descend and reached an altitude of 404 ft 7 seconds later, still on a southerly heading. The descent continued, and, 3 seconds later, the last recorded data point revealed that the airplane was at an altitude of 135 ft and a groundspeed of 124 knots on a southwesterly heading. The airplane subsequently impacted a tree on the golf course, traveled about 200 feet on a westerly heading before impacting a second tree, and came to rest about 60 feet west of the second tree in the middle of a fairway. Multiple witnesses on the golf course reported that the airplane was flying low on a southerly heading and that they heard the engine surge just before impact. All airplane components necessary for flight were accounted for at the accident site. Postaccident examination of the airframe and engine revealed no anomalies that would have precluded normal operation. The pilot likely took off and then realized that the ceiling was too low and the fog too dense for safe flight and attempted to return to the airport. The engine surge likely occurred as the pilot saw the tree just before impact.

## Probable Cause and Findings

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

The pilot's decision to depart in low-ceiling conditions and his continued visual flight rules flight into instrument meteorological conditions, which resulted in controlled flight into terrain.

## Findings

<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Environmental issues</b>	Low visibility - Decision related to condition
<b>Environmental issues</b>	Tree(s) - Contributed to outcome

## Factual Information

### History of Flight

<b>Initial climb</b>	VFR encounter with IMC (Defining event)
<b>Maneuvering</b>	Controlled flight into terr/obj (CFIT)

#### HISTORY OF FLIGHT

On July 8, 2014, about 0807 Pacific daylight time, a Cessna 182F, N5816B, was substantially damaged following impact with terrain at a golf course near Fall City, Washington. The certified private pilot, who was the owner and sole occupant of the airplane, sustained fatal injuries. The local flight was being operated in accordance with 14 Code of Federal Regulations Part 91, and a flight plan was not filed. Instrument meteorological conditions prevailed in the area of the accident at the time of the event. The flight departed the Fall City Airport (1WA6), about 2 minutes prior to the accident, with its destination being Harvey Field (S43), Snohomish, Washington.

In a postaccident interview, a family member reported that the purpose of the flight was for the pilot to take the airplane to S43 to undergo its scheduled annual inspection. The family member opined that the pilot would have never taken off into the fog, that he was a very meticulous and cautious pilot in all regards, and that on many occasions the pilot would cancel a flight if there was the slightest discrepancy with the airplane.

Several witnesses who were at the golf course at the time of the accident submitted statements to the National Transportation Safety Board (NTSB) investigator-in-charge (IIC). One witness reported that he heard the airplane, but could not see it due to the fog and low ceiling, which was about 50 feet above ground level (agl). One witness stated that he looked toward the noise and observed the airplane heading west barely off of the ground prior to the right wing impacting a tree and subsequently hitting a second tree. A second witness, who reported that the overcast condition was between 100 to 150 feet agl, stated that he heard the sound of a sputtering engine, which was immediately followed by a loud thud, "...and suddenly there was a plane, upside down, in the middle of the 9th fairway." A third witness estimated that the fog was about 20 feet off of the ground, and that he heard the airplane flying over, but could not see it. He heard the engine "...throttling up, then back, and then throttling up really heavy" right before impact. A fourth witness reported that the vertical visibility was about 75 feet due to the fog. He heard the airplane take off, which he thought was to the west, made a right turn, headed north, then made a left turn heading south over the Snoqualmie River. The witness stated that he observed the airplane flying directly overhead about 75 feet heading south, and then about 5 seconds later heard one explosion. A fifth witness reported, that while he never saw the airplane due to the very low fog, he believed he heard it flying for about 1 to 2 minutes during which he heard the engine throttle up, then throttle back before the airplane impacted the tree.

The airplane was recovered to a secure location for future examination.

## PERSONNEL INFORMATION

The pilot, age 70, possessed a private pilot certificate with a rating for airplane single-engine land. Information provided by the pilot on the application for his airman medical certificate on March 13, 2013, revealed a total flying time of 490 hours, 477 hours in make and model, and 20 hours accumulated in the six months previous to the accident. Records revealed that the pilot had received 75 hours of dual instruction in the accident airplane.

The pilot was issued a Special Issuance Third-Class Medical Certificate, with the restriction "Not valid for any class after March 31, 2015. The pilot successfully completed his most recent flight review on August 23, 2012, in the same make and model as the accident airplane.

## AIRCRAFT INFORMATION

The four-seat, fixed-gear, high-wing airplane, serial number (SN) 33816 was manufactured in 1956. It was powered by a Continental Motors Inc. (CMI) O-470-L-1 engine (SN 66818-6-L), equipped with a McCauley 2A34C66-OP propeller (SN 806983).

The airplane's airframe and engine logbooks were not located during the investigation. According to records provided by the maintenance facility that maintained the airplane, the most recent annual inspection occurred between July 9, 2013, and December 6, 2013. During this time frame, a 500-hour magneto inspection was conducted and the muffler was replaced. A work order dated between July 26, 2011, and August 5, 2011, indicated that the standby vacuum pump was placarded inoperative in accordance with Airworthiness Directive (AD) 99-24-10. In May 2006, a JPI EDM 700 was installed in the airplane. At the accident site, the tachometer reading indicated 471.1 hours.

## METEOROLOGICAL INFORMATION

On the morning of the accident, all airport reporting facilities within the surrounding area indicated clear sky conditions with light winds. The airport from which the accident airplane departed was located about 1/2 mile east of a river that borders the golf course's west boundary. Individuals on the golf course at the time of the accident reported a low cloud ceiling, and that the fog condition was such that tree-tops were obscured.

At 0753, the weather reporting facility located at the Renton Municipal Airport (RNT), Renton, Washington, which was the closest facility with weather reporting capabilities, about 14 nm southwest of the accident site, reported wind 310° at 6 knots, visibility 10 miles, sky clear, temperature 19°C, dew point 16°C, and an altimeter reading of 30.06 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

A survey of the accident site by representatives from the NTSB and the Federal Aviation Administration (FAA) revealed that the airplane had initially impacted an 80-ft high tree about the 15-foot level with its right outboard wing section on a measured magnetic heading of 270 degrees. The airplane then proceeded across a fairway on the golf course heading west for about 200 ft prior to colliding head on with a second tree of equal height as the first, and at the 18-foot level at a high rate of speed; the engine separated from the airplane, and was located at the base of the tree. The airplane, minus its engine, then traveled another 60 ft to the west before coming to rest on its right side in the middle of an adjacent

fairway on a measured magnetic heading of 090 degrees. The airplane was observed to have been severely fragmented due to impact forces, and there was no postcrash fire. All components necessary for flight were accounted for at the accident site.

A survey of the accident site revealed that debris was scattered over an area of about 510 feet in length on an east/west orientation, and about 125 feet in width on a north/south orientation

The cabin and cockpit areas were observed mangled, crushed, and exhibited major deformation as a result of high impact forces. The aft passenger seats and right pilot seat remain intact, while the left pilot seat had separated from the cockpit due to impact forces. The instrument panel was observed completely distorted and peeled away in a downward direction from the fuselage. The instrument panel cover, inclusive of the tachometer, ADF, VOR, transponder and directional gyro were located about 30 feet west of the second impact point, and just east of the main wreckage. Both left and right control yokes were bent and deformed.

The inboard one-third of the right wing was observed imbedded in a tree, which was the first point of impact (FPI) during the accident sequence. The remainder of the wing was fragmented due to impact forces, and scattered along a linear debris path to the west for 80 feet. The inboard section of the wing was located about 200 feet west of the FPI. The wing's flap was separated from the wing, and located about 30 ft southwest of the second point of impact, which was a tree. The wing's aileron was observed in the debris field about 25 feet southwest of the FPI, and remained attached to the associated wing's trailing edge. The wing's fuel tank was destroyed during the impact sequence, however, the fuel tank's fuel cap was intact and secure. When the fuel cap was removed, the rubber seal and securing mechanism was observed intact and in good condition. The associated fuel quantity indicator revealed a reading of slightly less than three-fourths full.

The left wing was observed mostly intact, inverted, and positioned about 18 feet southwest of the main wreckage. The wing exhibited damage consistent with extensive bending of the flap and wing structure, with the inboard structure of the leading edge having been severely buckled. The left flap and aileron remained attached to the wing at all attach points. The fuel bladder was observed in the wing, but had ruptured during the impact sequence. When the fuel cap was removed, the rubber seal and securing mechanism was intact, not compromised, and in good condition. The associated fuel quantity indicator registered full.

The empennage remained relatively intact, with impact forces observed. With the exception of a portion of the outboard 6 inches of the right elevator, the control surface remained attached to the trailing edge of the right horizontal stabilizer at all attach points. The right horizontal stabilizer remained attached to the fuselage at all attach points. The outboard one-third had sustained impact damage, with the upper and lower surfaces wrinkled. The left elevator remained attached to the left horizontal stabilizer at all attach points, and was bent and wrinkled on both upper and lower surfaces. The left horizontal stabilizer remained attached to the aft fuselage at all attach points. It was also bent and wrinkled on both upper and lower surfaces.

Both right and left main landing gear remained intact with no visible damage, and attached to the main gearbox at all attach points. The nose landing gear was observed separated from the forward fuselage attach points, and located about 250 feet west of the main wreckage site.

During the accident sequence, the airplane's battery separated, and was located about 210 feet northwest of the main wreckage. Additionally, the propeller, which also separated from the engine, was located about 100 feet north-northwest of the main wreckage.

## MEDICAL AND PATHOLOGICAL INFORMATION

On July 9, 2014, an autopsy was performed on the pilot at the facilities of the King County Medical Examiner's Office, Seattle, Washington. The examination report revealed that the cause of death was due to blunt force injuries of the head, torso, and extremities.

According to the toxicology report provided by the FAA's Civil Aeromedical Medical Institute, Oklahoma City, Oklahoma, no carbon monoxide detected in Blood, no ethanol detected in Urine, and cyanide testing was not performed. Additionally, the following drugs were detected:

Amitriptyline detected in Blood  
Amitriptyline detected in Urine  
Nortriptyline detected in Blood  
Nortriptyline detected in Urine  
Telmisartan detected in Urine  
Telmisartan detected in Blood

A review of the pilot's medical records by an NTSB Medical Officer revealed that the pilot reported a complex medical history to the FAA including sleep apnea, hypertension, cataracts, an acoustic neuroma, a pulmonary embolus, and intermittent treatment for depression. At his medical examination in 2013, the pilot reported use of telmisartan and aspirin. No significant natural disease was identified at autopsy. Telmisartan is a prescription medication used to control high blood pressure, often marketed with the name Micardis. Amitriptyline is a tricyclic antidepressant often marketed with the name Elavil. Its metabolite is nortriptyline. (Refer to the NTSB Medical Factual Report, which is appended to the docket for this report.)

## TESTS AND RESEARCH

### Engine Examination

On July 16, 2014, under the supervision of the NTSB IIC, an examination of the engine was performed by a CMI air safety investigator. The investigator reported that the engine sustained impact damage that resulted in the separation of the magnetos and carburetor, the partial separation of the number 4 and number 5 cylinders, as well as a fractured crankcase. The impact-related damage precluded any functional testing of any of the components. In addition, rotation of the crankshaft was not possible due to the fractures of the crankcase and cylinder damage. However, examination of the engine and its components did not reveal any anomalies that would have prevented the production of full power. (Refer to the Continental Motors, Inc. Engine Field Inspection Report, which is appended to the docket for this report.)

### Airframe Examination

On July 16, 2014, under the supervision of the NTSB IIC, an examination of the airframe was performed by a Textron Aviation air safety investigator. Upon completion of the examination, the investigator reported the following findings to the IIC:

The fuselage front section was fragmented. The firewall was partially separated.

The right wing was fragmented into large sections. The right wing leading edge exhibited an aft semicircle buckle toward the right wing front spar at approximately mid-section.

The left wing was intact with wrinkles and buckles in the wing skin. The leading edge from the left wing strut inboard was crushed aft toward the left wing front spar.

The aft fuselage exhibited cut signatures consistent with recovery initiatives forward of the top rotating beacon (about Fuselage Station (FS) 108.00"). The vertical and both horizontal stabilizers remained attached to the aft fuselage. The top mid-section of the vertical stabilizer was crushed down and to the right. The right horizontal stabilizer outboard section/tip was crushed toward to the aft fuselage.

The cockpit/cabin fuselage was reduced in volume.

Flight control cable continuity was established from the cockpit to each flight control. The aileron and flap cable separations exhibited signatures consistent with tensile overload. The elevator, rudder, and stabilizer trim cable separations exhibited cut signatures consistent with recovery initiatives in the aft fuselage (about F.S. 108.00). The mechanical flap and stabilizer trim positions could not be determined due to impact damage.

The fuel selector valve shaft assembly attached to the fuel selector valve handle was separated from the fuel selector valve. Both fuel tanks were breached during the impact sequence resulting in fuel blighting to the fairway grass.

The pilot's seat rails displayed signatures indicating the seat position locking pin was secured in the third adjustment hole from the front. A secondary seat stop was not installed.

The airspeed indicator needle was jammed by broken glass at 125 MPH. The ignition key was separated, with the switch in the BOTH position.

The propeller was observed separated from the engine crankshaft propeller flange. The two-bladed propeller assembly blades remained attached to the propeller hub. Both propeller blades exhibited twisting toward the non-cambered side and leading edge polishing. (Refer to the Summary of Airplane Examination, which is appended to the docket for this report.)

#### Examination of Onboard Electronic Devices

##### Garmin GPSMAP 296

The NTSB IIC submitted the component to the NTSB Vehicle Recorder Laboratory, Washington, D.C., for examination and extraction of any non-volatile data that could aid in the investigation. As a result, the vehicle recorder specialist reported that when the unit was received it was observed to have sustained

minor impact damage. Power was applied to the device, and information was downloaded normally, without difficulty.

The data extracted included 56 recording sessions from July 28, 2013, through July 8, 2014. The accident flight was the last flight recorded, starting at 07:52:51, and ending at 08:07:02, on July 8, 2014.

About 08:05:50, the airplane began its takeoff roll, and between 08:06:01 and 08:06:08, the airplane track began to turn towards the north. About 08:06:26, the track began to turn towards the west, and at 08:06:34, the initial takeoff climb reached a maximum recorded GPS altitude of 515 feet. About 8 seconds later, at 08:06:42, the airplane was traveling south, and the recorded GPS altitude was 217 feet at 127 knots groundspeed. Ten seconds later, at 08:06:52, the airplane had climbed to a maximum altitude of 577 feet at a groundspeed of 102 knots, and at 08:06:59, the airplane was observed to have descended to 404 feet, now at a ground speed of 107 knots. The last recorded point was at 08:07:02, when the airplane was at an altitude of 135 feet at a groundspeed of 124 knots on a southwesterly track.

#### JPI EDM-700

The JPI Instruments EDM-700 is a panel mounted instrument, which enables the operator to monitor and record up to 24 parameters related to engine operations. The unit contains non-volatile memory for data storage of the parameters recorded and calculated.

Upon arrival at the NTSB Vehicle Recorder Laboratory, Washington, D.C., an exterior examination of the unit revealed that the device had sustained minor impact damage.

The recorded data included dates between May 15, 2014, through the accident flight on July 8, 2014. The parameters recorded were EGT, CHT, voltage, and fuel flow. The entire accident flight consisted of six data samples, and the values being fairly consistent, with CHTs between 200°C and 300°C, EGTs between 900°C and 1,400°C, fuel flow between 4 and 5 gph, and voltage between 13 and 14 volts. (Refer to the NTSB Vehicle Recorder Specialist's Electronic Devices Factual Report, which is appended to the docket for this accident.)

#### ADDITIONAL INFORMATION

According to FAA Advisory Circular 61-134, General Aviation Controlled Flight Into Terrain Awareness, Controlled Flight Into Terrain (CFIT), "CFIT occurs when an airworthy aircraft is flown, under the control of a qualified pilot, into terrain (water or obstacles) with inadequate awareness on the part of the pilot of the impending collision.



## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	70, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	None	<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>	March 13, 2013
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	August 23, 2012
<b>Flight Time:</b>	490 hours (Total, all aircraft), 477 hours (Total, this make and model), 405 hours (Pilot In Command, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N5816B
<b>Model/Series:</b>	182 F	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1956	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	33816
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	Annual	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	CONT MOTOR
<b>ELT:</b>	C91A installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-470 SERIES
<b>Registered Owner:</b>	JOHN R. CILIBERTI	<b>Rated Power:</b>	230 Horsepower
<b>Operator:</b>	JOHN R. CILIBERTI	<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>	RNT,32 ft msl	<b>Distance from Accident Site:</b>	14 Nautical Miles
<b>Observation Time:</b>	07:53 Local	<b>Direction from Accident Site:</b>	250°
<b>Lowest Cloud Condition:</b>	Clear / 30 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	6 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	310°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.05 inches Hg	<b>Temperature/Dew Point:</b>	19°C / 16°C
<b>Precipitation and Obscuration:</b>	Heavy - Patches - Fog		
<b>Departure Point:</b>	FALL CITY, WA (1WA6)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	SNOHOMISH, WA (S43 )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	08:05 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	FALL CITY 1WA6	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	140 ft msl	<b>Runway Surface Condition:</b>	Wet
<b>Runway Used:</b>	W	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	3000 ft / 25 ft	<b>VFR Approach/Landing:</b>	Unknown

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<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>	47.558612,-121.878051

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Little, Thomas
<b>Additional Participating Persons:</b>	Bill D Shinn; Federal Aviation Administration; Renton, WA Nicole Charnon; Continental Motors, Inc.; Mobile, AL Ernest Hall; Textron Aviation; Wichita, KS
<b>Original Publish Date:</b>	May 2, 2016
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=89622">https://data.nts.gov/Docket?ProjectID=89622</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](#).