Aviation Investigation Final Report

Location:	Coeur d'Alene, Idaho	**Accident Number:**	WPR16FA131
Date & Time:	June 25, 2016, 12:00 Local	**Registration:**	N4585F
Aircraft:	Cessna A185F	**Aircraft Damage:**	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was on a local personal flight in the airplane. According to witnesses, the pilot appeared to fly a series of practice approaches at a remote private airstrip and then flew northeast up a nearby canyon towards rising mountainous terrain. The airplane impacted trees on the canyon hillside about 1 mile from the airstrip on a southwest heading, indicating that the pilot had reversed course. It is likely that the pilot realized that the canyon narrowed ahead and that he was surrounded by rising terrain. He likely attempted to turn the airplane around, and while maneuvering in the turn, he was unable to maintain clearance with the trees on the canyon hillside.

No significant weather or turbulence was reported or forecast in the area, however wind at the time of the accident may have created some light turbulence, though it is unlikely to have affected the flight.

Postaccident examination of the airframe and engine revealed no evidence of pre-impact mechanical malfunctions or failures that would have precluded normal operation. The engine was subsequently test run in a test cell at various power settings with no anomalies noted.

It is unlikely that the pilot's elevated blood pressure, insomnia, or medications used to treat these conditions impaired him or contributed to the accident. Additionally, it is unlikely that the pilot's antidepressant medications contributed to the accident. The pilot had used the potentially-impairing medication tramadol before the accident. However, because of variations in patient tolerance to opioid medications and possible postmortem changes in drug concentrations, the investigation was unable to determine if the pilot was impaired by tramadol at the time of the crash.

Probable Cause and Findings

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

The pilot's failure to maintain clearance from trees while maneuvering at low altitude in mountainous terrain.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Altitude - Not attained/maintained
Personnel issues	Monitoring environment - Pilot
Personnel issues	Use of medication/drugs - Pilot
Environmental issues	Mountainous/hilly terrain - Effect on operation
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event
Maneuvering	Controlled flight into terr/obj (CFIT) (Defining event)

On June 25, 2016, about 1200 Pacific daylight time, a Cessna A185F airplane, N4585F, was substantially damaged when it collided with terrain about 15 miles northeast of Coeur d'Alene, Idaho. The private pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91.Visual meteorological conditions prevailed, and no flight plan was filed for the local flight. The airplane departed Felts Field Airport (SFF) Spokane, Washington, about 1126.

A witness located at the Horse Haven Airstrip, a remote private airstrip about 1 mile southwest of the accident site, reported seeing the airplane flying northeast before it "came back around buzzing us as if to land on the airstrip." Another witness located at the airstrip stated that the airplane made two passes over the airstrip: the first pass was "very high, and the second pass was just above the tree tops in a northeast direction." The witness further reported that after the second pass, the airplane never returned, and that no noise was heard after the airplane did not return.

There were no witnesses to the impact. The wreckage was discovered later in the day by an individual passing through the area.

Pilot Information

Certificate:	Private	**Age:**	70,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 29, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	3505 hours (Total, all aircraft)		

The pilot, age 70, held a private pilot certificate with an airplane single-engine land rating. The pilot was issued a Federal Aviation Administration (FAA) third-class airman medical certificate on March 29, 2016, with the limitation that he must wear corrective lenses. The pilot reported on the application for this medical certificate that he had accumulated 3,505 total flight hours and had logged no flight hours in the last 6 months. The pilot's logbook was not located during the investigation.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N4585F
Model/Series:	A185F F	**Aircraft Category:**	Airplane
Year of Manufacture:	1966	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1851092
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	April 11, 2016 Annual	**Certified Max Gross Wt.:**	3350 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3788.2 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:	C91 installed, not activated	**Engine Model/Series:**	IO-520 SERIES
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The high-wing, fixed gear airplane, was manufactured in 1966. It was powered by a 300 horsepower Continental IO-520-F-C-D (9) reciprocating engine driving a two-bladed McCauley D2A34C58 constant speed propeller.

A maintenance invoice indicated that the airplane's most recent annual and 100-hour inspections were completed on April 11, 2016. At the time of the accident, the airplane had been flown 11.2 hours since the annual inspection.

According to the performance section of the owner's manual for the airplane, the airplane's maximum rate of climb at 5,000 ft, and a temperature of 41° C, was 1,425 feet per minute (fpm) at a gross weight of 2,300 pounds (lowest weight listed) and 1,050 fpm at a gross weight of 2,800 pounds.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCOE,2307 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	11:55 Local	**Direction from Accident Site:**	255°
Lowest Cloud Condition:	Few / 3500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 5000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/ Unknown
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/ Unknown
Altimeter Setting:	30.21 inches Hg	**Temperature/Dew Point:**	17°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SPOKANE, WA (SFF)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	Unknown
Departure Time:	11:26 Local	**Type of Airspace:**	Class G

The 1155 weather observation at Coeur d'Alene Airport – Pappy Boyington Field, Coeur d'Alene, Idaho, located about 16 miles southwest of the accident site, reported wind, 140° at 6 knots with gusts to 15 knots, visibility 10 statute miles, few clouds at 3,500 ft, scattered clouds at 4,300 ft, broken clouds at 5,000 ft, temperature 17º C, dew point 8º C, and an altimeter setting of 30.22 inches of mercury.

A review of the weather information revealed that no significant weather or turbulence was reported or forecast in the accident area. No AIRMETS or SIGMETS were valid in the area at the time of the accident. The wind speed was estimated to be about 5 to 15 knots.

Given the atmospheric conditions on the day of the accident, the density altitude at the accident location was calculated to be about 3,859 ft.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	47.83361,-116.483612(est)

The airplane was examined at the accident site by investigators from the National Transportation Safety Board (NTSB), Continental Motors, and Textron Aviation. The airplane impacted heavily wooded terrain, at an elevation of about 3,133 ft, and came to rest inverted on a canyon hillside, with a slope of about 45.° The ridgelines surrounding the site were separated by a distance of about 3,500 ft and were

several hundred feet above the accident site elevation. The canyon was orientated southwest to northeast and narrowed to the northeast, with the distances between ridgelines decreasing to about 2,200 ft about 1/3 mile northeast of the accident site. The canyon continued to narrow a couple miles further northeast, with the canyon floor elevation increasing by several hundred feet, and the ridgelines increasing to about 1,500 ft above the elevation of the accident site.

The debris path was about 150 ft long on a heading of 220° magnetic and began with an initial impact to a tree top about 100 ft in height. The second point of impact was a group of 4 trees about 50 ft west of the initial impact point. The last portion of the debris path was a disturbed area of dirt about 25 ft long, 3 ft wide, and 2 inches deep, that led to the main wreckage. All major components of the airplane were located along the debris path. Flight control continuity was established to the empennage. One personal electronic device was recovered from the wreckage.

The left wing was separated at the fuselage and located about 15 ft downhill from the main wreckage. The left wing exhibited "accordion type" crushing damage to the leading edge mid-span. Both the aileron and flap remained attached to the wing.

The right wing was separated from the fuselage at the wing root but remained located with the main wreckage. The aileron and flap remained attached to the wing. Impact damage was observed on the bottom side of the wing from the leading edge to trailing edge. A small amount of fuel was drained from the right wing and tested negative for water contamination.

The forward upper portion of the passenger cabin was crushed from impact. The heading indicator displayed 230° magnetic and the fuel selector was in the both position. The ignition switch was selected to both.

The left horizontal stabilizer was separated from the empennage and located about 31 ft east of the main wreckage. The left stabilizer exhibited crushing impact damage to the inboard portion of the leading edge and the elevator remained attached. The vertical stabilizer and rudder remained attached. The leading edge of the vertical stabilizer exhibited crushing damage, and the tip fin assembly that contained the beacon light was separated from the vertical stabilizer and located about 30 ft east of the main wreckage. The right horizontal stabilizer and elevator remained attached and were intact.

The on-scene examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. Following the on-scene examination, the airplane wreckage was recovered to a secure facility for further examination.

The postaccident examination of the engine revealed that all engine components and accessories were present. The crankshaft could be manually rotated by hand by the propeller and continuity was established throughout the crankshaft and drivetrain. The combustion chamber of each cylinder was examined using a borescope and revealed evidence of normal operational conditions.

The examination of the engine revealed no evidence of pre-impact mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

The Spokane County Medical Examiner's Office, Spokane, Washington, conducted an autopsy on the pilot. The medical examiner determined that the cause of death was "blunt force trauma."

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicological testing on the pilot. Testing was negative for carbon monoxide and volatiles. Drug testing detected bupropion in liver and cavity blood; tramadol at 0.943 ug/g in liver, at 0.476 ug/g in lung, and at 0.102 ug/ml in cavity blood; and zolpidem at 0.065 ug/g in lung, at 0.01 ug/g in liver, and not in blood.

Bupropion is an antidepressant used to treat depression and help patients quit smoking, often marketed with the names Wellbutrin and Zyban. Its carries a warning and advises patients not to drive or use heavy machinery until the medication's effects are known and there is a dose-dependent risk of seizures.

Tramadol is a prescription opioid available as a Schedule IV controlled substance, that is used to treat pain. Typical therapeutic levels of tramadol are between 0.05 and 0.50 ug/ml. It carries the warning: "… may impair the mental and or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery. The patient using this drug should be cautioned accordingly." Additionally, it increases the risk of seizures via an unknown mechanism, even when used at usual doses. The FAA advises pilots not to fly while using tramadol. Individual tolerances to opioid medications and postmortem changes can affect the drug's concentration.

Zolpidem is a prescription central nervous system depressant used as a short-acting sleep aid, often sold with the name Ambien. It carries the warning, "due to the rapid onset of action, zolpidem tartrate should only be taken immediately prior to going to bed."

According to a family-provided summary of personal medical records from April and June of 2016, the pilot's active medical conditions included high blood pressure controlled with losartan; (losartan is generally not considered to be impairing); degenerative disc disease, and low back pain treated with tramadol; depression and anxiety treated with bupropion and citalopram; and insomnia treated with zolpidem.

Citalopram is a prescription antidepressant commonly marketed as Celexa and is not generally considered impairing.

Tests and Research

The engine was shipped to the manufacturer for an engine run and detailed examination. The engine was prepared for the engine run by fitting it with a test propeller appropriate for the engine model and a wiring harnesses for the left and right magnetos. Further, a magneto-to-engine timing and cylinder leakage tests were accomplished.

The engine started normally and was run at various power settings for several minutes, including at full power, with no anomalies noted. Further, the engine throttle was rapidly advanced from idle to full throttle a couple of times, and the engine performed normally with no hesitation, stumbling, or interruption in power.

The personal electronic device recovered from the wreckage was sent to the NTSB Vehicle Recorders Laboratory for download. No information pertinent to the investigation was present in the device.

Administrative Information

Investigator In Charge (IIC):	Nixon, Albert
Additional Participating Persons:	Eric Johnson; Federal Aviation Administration; Spokane, WA Mike Counsil; Continental Motors Inc.; Mobile, AL Henry Soderlund; Textron Aviation; Wichita, KS
Original Publish Date:	May 9, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=93454